

---

**PLANNING & ZONING COMMISSION  
Regular Meeting  
Wednesday, August 17, 2016  
6:30 p.m.**

**Planning and  
Zoning Commission**

Anthony Spinelli,  
Chairman

Commission  
Members:  
Ryan Kwasneski  
David Maher  
Jerry McGleam  
Jason Sanderson  
Matthew Zolecki  
Ed Andrusiak

**I. CALL TO ORDER**

**A. Pledge of Allegiance**

**B. Verify Quorum**

**C. Approval of Minutes July 20, 2016 meeting**

**II. CHAIRMAN'S COMMENTS**

**III. PUBLIC HEARINGS**

**A. 16-07 UDO Amendments**

**IV. ACTION ITEMS**

**V. GENERAL DISCUSSION**

**A. Update from Village Board**

**VI. AUDIENCE PARTICIPATION**

**VII. ADJOURNMENT**

**Planning & Economic  
Development  
Department Staff**

Charity Jones, AICP,  
Director  
Heather Valone, Planner

**Village of Lemont**  
**Planning and Zoning Commission**  
Regular Meeting of July 20, 2016

A meeting of the Planning and Zoning Commission for the Village of Lemont was held at 6:30 p.m. on Wednesday, July 20, 2016 in the second floor Board Room of the Village Hall, 418 Main Street, Lemont, Illinois.

**I. CALL TO ORDER**

**A. Pledge of Allegiance**

Chairman Spinelli called the meeting to order at 6:37 p.m. He then led the Pledge of Allegiance. He asked the audience to remain standing and raise his/her right hand to be sworn in. He then administered the oath.

**B. Verify Quorum**

Upon roll call the following were:

Present: Andrysiak, Kwasneski, McGleam, Sanderson, Zolecki, Spinelli

Absent: Maher

Planning and Economic Development Director Charity Jones, Village Planner Heather Valone, Village Trustee Ron Stapleton, and Fire Marshall Dan Tholotowsky were also present.

**C. Approval of Minutes for the June 15, 2016 Meeting**

Commissioner Kwasneski made a motion, seconded by Commissioner Andrysiak to approve the minutes from the June 15, 2016 meeting with no changes. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

**II. CHAIRMAN'S COMMENTS**

Chairman Spinelli greeted the audience.

**III. PUBLIC HEARINGS**

**A. 16-05 23 E. Logan Street Variation**

Chairman Spinelli called for a motion to open the public hearing for Case 16-05.

Commissioner Andrysiak made a motion, seconded by Commissioner McGleam to open the public hearing for Case 16-05. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

### **Staff Presentation**

Mrs. Valone stated that Ken McClafferty, who is acting on behalf of the owner of the property, is requesting a variation to allow driveway access in a Single-Family Preservation Infill District via the street rather than the alley. Staff is recommending denial of the variation. The subject property is currently vacant and the applicant is proposing to construct a single-family home on the property. The subject property is located two lots west of Brown Park along Logan Street. An alley runs between Custer and Logan with access from Park Place. The alley right-of-way terminates roughly 50 feet east of the subject property where Brown Park is located. Per the UDO “if an existing alley provides access to the lot in question, then detached and attached garages shall be accessed from the alley”. The UDO defines an alley as “a public or private right-of-way primarily designed to serve as a secondary access to the side or rear of those properties whose principal frontage is on some other street”. The standard width of an alley per the UDO is 16 feet.

The applicant submitted a building permit for a single-family home with a two-car attached garage with access off of E. Logan Street on April 14, 2016. Staff denied the permit on April 19, 2016 because of the alley access requirement. The permit had multiple items in addition to the driveway access which did not meet UDO standards including the proposed maximum square footage of the home. The applicant filed an appeal on May 14, 2016, which was denied by the PZC on June 15, 2016.

Mrs. Valone said the UDO states that the variation request must be consistent with the following three standards to be approved. The first standard is that the variation is in harmony with the general purpose and intent of the UDO. The general purpose of the UDO has eight components, six are either not applicable to or unaffected by the variation request. The first purpose that was applicable to the application is ensuring that adequate light, air, privacy and access to property. The variation would not negatively impact light or air to the property. The variation would allow for access to the property from the street rather than from the alley. The property has the same accessibility from either the street or alley. The second purpose that is applicable is protecting the character of established residential neighborhoods. The proposed variation is not consistent with the established neighborhood character. The majority of the properties surrounding the subject property have detached garages with driveways that access via the alley. Those homes that do have driveways with street access also have detached garages located in the rear of the properties. The proposed two-car front load garage and driveway is not consistent with the neighborhood.

The second standard for granting variations is that the plight of the owner is due to unique circumstances, and thus strict enforcement of the UDO would result in practical difficulties or impose exceptional hardships due to the special and unique conditions that are not generally found on other properties in the same zoning district. The UDO states that in making a determination whether there are unique circumstances, practical difficulties or particular hardships in a variation petition that there are five factors that should be taken into consideration. The first factor is that the particular physical surroundings, shape, or topographical conditions result in a particular hardship upon the owner that is distinguished from a mere inconvenience. The subject property is the last remaining vacant property along East Logan Street from Park Place to Brown Park. The subject property has similar lot size, shape, and topographical conditions as the surrounding properties. The subject property gradually slopes down from the front of the property to the rear property line. This is similar to the properties that are east and west. The properties to the north of the subject site gradually slope down from the rear to the front of the property. The physical characteristics of the subject property are not unique when compared to the surrounding properties.

The applicant also submitted a cost estimate for the proposed alley as evidence of a hardship. The applicant estimates the total cost for the construction of the alley would be approximately \$17,000.00. The applicant also estimated that the cost of the street access driveway to be roughly \$1,400.00. The Village Engineer reviewed the estimates and commented that the costs for the alley access were too high and the estimate for the street access driveway was too low. The Village Engineer provided an alternate cost estimate. The cost for the applicant to pave the driveway from East Logan Street to the attached garage with corresponding sidewalk alterations is estimated at \$5,800.00. The estimate for the alley driveway and retaining wall is roughly \$12,000.00. The total estimated cost difference between the alley and street access with a retaining wall is roughly \$6,000.00 which does not create an economic hardship. Additionally, these costs would equally be applicable to all other similar adjacent properties making this not unique for the subject property.

Mr. Valone stated the second factor is the conditions upon which the petition for variation is based would not be applicable generally to other property within the same zoning district. The properties to the west of the subject property along Logan Street all have vehicle access through the alley rather than the street. The alley behind the property to the west prior to 2011, was not paved across the entire rear property line. A detached garage was constructed in 2011 at 15 E. Logan Street and the alley was extended. At that time, the alley was paved only 12 feet past 15 E. Logan's west lot line. The homeowner for 15 E. Logan Street was required to extend the alley across the entire lot to the property line it shares with 23 E. Logan Street. Staff sees no distinction between the condition of 23 E. Logan Street and 15 E. Logan Street or any other lots along the alley in question.

The paved alley currently terminates at the west property line of the subject property. The applicant has indicated that since the alley is not a through alley that it prevents

the use of the alley to this property. The neighboring lots to the west are able to enter and exit their properties effectively via the alley even though it terminates midblock. Currently, 15 E. Logan is the terminus of the paved portion of the alley. The property owner is able to access their garage even though the alley does not extend past its east property line. Thus, the condition of the subject property are similar to the neighboring properties that currently utilize the alley for driveway access.

The third factor is that the alleged difficulty or hardship has not been created by any person presently having an interest in the property. The alleged hardship is partially created by the current owner of the property. The owner subdivided a larger piece of property to create two pieces of property. The subject property was original one large lot improved with a single-family home. The lot was comprised of the subject property and the property known as 15 E. Logan. The original home is situated on 15 E. Logan Street. In 2008, Mako Properties subdivided the larger property to create two smaller properties. When the property was only one large lot there was an existing single-family driveway that accessed from E. Logan Street. Sometime between 2008 and 2009 the driveway was removed and replaced with a service walk since it was partially located on the newly created 23 E. Logan Street and 15 E. Logan Street. The driveway apron still remains in the parkway. However, had 15 E. Logan Street had not extended the alley to the east property line it shares with the subject property there would not have been alley access. The subject property in that scenario would have been separated from the paved alley by another private property.

The fourth factor is that granting a variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood. The request will not be detrimental to public welfare or injurious to other properties or improvements. The fifth factor is the variation will not impair and adequate supply of light and air to adjacent properties or substantially increase congestion in the public street or increase the danger of fire or endanger the public safety. The variation would not endanger public safety, substantially impair property values or increase the danger of fire or congestion.

Mrs. Valone said the third standard for granting variation is that it will not alter the essential character of the locality and will not be a substantial detriment to adjacent property. The requested variation will alter the essential character of the area. The subject property is located in the R-4A District which has specific and unique purposes. The future land use for the subject property defined by the Comprehensive Plan is Infill Residential. The purposes of the future land use is to ensure any new development or redevelopment will be consistent with the established character of the surrounding neighborhood, similar to the intent of the R-4A District. The R-4A properties, unlike the standard R-4 properties have a number of unique standards due to the size of the lots, the older established homes that have been constructed, and the intent and purpose of the R-4A zoning district. Two of the most visible standards that the R-4A regulates are the driveway placement and the size of the homes.

The surrounding properties have detached garages rather than attached garages. The proposed attached two-car front load garage is inconsistent with the majority of the surrounding neighborhood. There are 40 homes within a two block area, of those 40 homes 50% have detached garages that access via the alley, 38% have detached garages in the rear of the property that have street access and 13% have two-car garages that access via the street. Nine homes along Logan Street from Brown Park to Warner Avenue do not have alley access. She showed on the overhead those homes. There is no alley that services the rear of them. If these properties are removed from the study area, the percentage of existing homes with detached garages increases substantially. 65% of homes have alley access, 29% of homes have a detached garage in the rear of the property that accesses via the street, and 6% of homes have attached two-car garages with street access. The proposed garage and driveway does not conform to either the typical driveway or garage configuration that currently exist in the neighborhood.

Currently the property to the east of the subject property is the only home with a driveway that interrupts the sidewalk on the north block face of E. Logan Street from Park Place to Brown Park. The apron in the parkway at 15 E. Logan Street, although present, narrows to a roughly four foot service walk once on the property. The sidewalks on the subject property are important due to the fact that there are no sidewalks on the south side of E. Logan Street from Ridge Road to Warner Avenue. These sidewalks along this block are the only pedestrian friendly access to Brown Park.

Additionally, the proposed variation request could create the basis of another variation application. The proposed home as it is currently depicted in the submitted architectural plans exceeds the maximum permitted square footage for R-4A homes. The R-4A properties are limited in size to conform to the existing homes. The maximum square footage of a home that can be built on the subject property is roughly 2,600 square feet. The proposed home with the attached two-car garage exceeds the maximum area by 192 feet. The proposed driveway and garage are not consistent with the neighborhood and characteristics. If allowed to keep the two-car garage he'll have to make significant alterations to his architectural plans or apply for another variation to be constructed as shown.

Mrs. Valone stated although the next item she will go through is not considered a standard for a variation, the applicant has indicated that providing alley access would aggravate the drainage issues that exist in the rear of the lot and alley. The Village Engineer has reviewed the site design for the alley access and finds that construction of the alley will not aggravate the rear yard drainage. The Engineer's review finds that the paving of the alley would not aggravate nor improve the drainage issues of the subject property or the property to the north. Although the alley extension represents an increase in impervious area, it is not a significant increase to create stormwater issues since the property to the north is already lower and accepting some portion of the subject property's runoff. The home on the northwest side of the alley constructed an asphalt edge that interrupts the stormwater and directs it to the grass

area behind the subject property. The berm was likely intentionally created by the neighbor to direct more stormwater to the subject property as the site has been vacant for years.

The property was visited by staff the morning after a large rain event on July 8, 2016. During that time there was no pooling of water in the rear yards of the subject property or on the neighboring property to the north. The only pooling of water that was observed in the alley was along that asphalt edge that directs water toward the subject property.

Mrs. Valone said the UDO requires that the applicant demonstrate consistency with all three of the variation standards. Staff finds the variation does not meet all the standards for granting approval. Staff recommends denial of the variation. The driveway access and proposed attached front loading two-car garage is not consistent with the character of the neighborhood. The property is not unique from the neighboring properties that already utilize the alley for driveway access. The UDO requirement to provide alley access has also recently been enforced on a nearly identical property immediately west of the subject site. The construction of the alley access does not create an economic hardship and the paving of the alley will not aggravate drainage issues in the rear yards.

Although staff recommends denial of the proposed variation, if the PZC concludes that the standards for a variation have been met by the applicant, staff would recommend that the variation require a detached garage located in the rear of the property, rather than the proposed front loading garage, to better conform to the character of the area. She stated this would conclude staff's report.

Chairman Spinelli asked if any of the Commissioners had questions for staff.

Commissioner McGleam said in staff's report on page four it talks about in 2011 the Village required them to extend the alley across the entire property line. He asked what was that pursuant to.

Mrs. Jones stated at that time there was an application for construction of a new garage. It had to be accessed off the alley and the alley was unimproved at that time.

Commissioner McGleam asked if this was spelled out in the UDO.

Mrs. Jones said if an alley provides access and a garage is proposed in the R-4A then the garage must be accessed off the alley. It is incumbent upon the person who is building the garage or the home to construct the alley to provide the access. The administrative interpretation has been if the pavement is to the subject's property line then the alley is deemed to provide access. As an administrative policy they do not require an applicant to extend an alley across other people's property to provide access to their improvement. It is only on the right-of-way immediately adjacent to their property.

Commissioner McGleam stated the Village Engineer stated that the storm water runoff would be to the property to the north.

Mrs. Valone said the property to the north is already accepting some water because it is lower than the subject property. Per State law that property will have to continue to accept that water but any additional water that is created based on this development has to be mitigated.

Commissioner McGleam asked if there is a responsibility for stormwater control within the public right-of-way. After that alley is developed and is accepted by the Village it becomes public right-of-way.

Mrs. Valone stated the amount of stormwater in theory that would be generated is not significant enough to impact the property to the north. The way it is built is that it is crowned so you are pushing water off to both sides so they are both accepting some of the stormwater.

Discussion continued in regards to stormwater runoff from an alley.

Commissioner Andrysiak asked if the 200 square foot credit was applied for having an attached garage.

Mrs. Valone stated yes she did and he was exceeding code restrictions.

Commissioner Andrysiak said one of his concerns is during the winter when a plow comes down and piles up the snow at the end.

Mrs. Valone stated right now they would be pushing the snow to the back of 23 E. Logan Street. There is still some area after 23 E. Logan where the snow can be piled up.

Commissioner Andrysiak asked if the easement on the lots was part of the footage calculation.

Mrs. Valone said no it is not.

Chairman Spinelli asked if there were any further questions for staff. None responded. He then asked if the applicant wanted to come up and make a presentation.

### **Applicant Presentation**

Ken McClafferty, builder acting on behalf of the owner, stated he is requesting a variance to have a driveway have access off of Logan Street. The purpose of the UDO was to regulate the height, building coverage, and the impervious surface of the



residential unit. By requiring them to pave 16 by 50 feet of alley it would add more impervious surface which is going against the UDO's intention originally. By paving the alley it would require more pavement in the rear than in the front. Also in the R-4A Infill District it intended to provide owners for infill development to vacant lots. The only thing they are looking for is to have access off of Logan Street. As far as the square footage they are willing to comply.

The Illinois Department of Transportation Bureau of Local Roads and Streets Manual states that an alley should connect to a public street at each end and should not terminate at a permanent dead-end. There are many reasons for this including public safety and particularly snow plows, drainage, and service vehicles. The other reason they are requesting the variance is for financial hardship. He said he still does not agree with the Village Engineer's numbers for the cost of putting an alley in. He has priced a couple of paving companies and just for the alley it would be \$10,000.00. He has figured it would cost about \$25,000.00 in total which includes the retaining wall.

In regards to stormwater, the berms that are in the alley clearly shows that there are drainage issues. If there were no drainage issues then the homeowners would not be putting berms there. The alley is on an angle and he feels it does not conform to IDOT regulations either. All the water on that alley is being guided down to the grassy spot behind the subject property. If they pave that alley then all that water has to go somewhere else and the same thing with the snow plows. The snow plows will first tear up all those berms. All the homes that have driveways and detached garages on the back of their properties also have curb cuts on Logan Street. If they have access in the back then they are going to be taking up more parking on Logan Street because they will not be able to get into their garage or it won't be convenient for them. He asked for the Commission to approve the variance based on these reasons.

Chairman Spinelli asked if any of the Commissioners had questions for the applicant at this time.

Commissioner McGleam asked if the owner of 23 E. Logan have half an assessment for the alley.

Mrs. Jones stated no it's a public right-of-way.

Mr. McClafferty stated the neighbors to the north have been maintaining that alleyway and cutting the grass. He said they could have claim to that land.

Commissioner Zolecki clarified that they are not looking for any other variances.

Mr. McClafferty said they are going to build it to the R-4A requirement and they are only looking for the access variance.

Commissioner Zolecki asked if he was interested in revising the plans and making the garage detached.

Mr. McClafferty stated no they plan on reducing the square footage of the home.

Commissioner Zolecki said one thing that was mentioned was maintaining the character of the neighborhood. He asked did he feel that an attached front-load garage would enhance the character of the neighborhood.

Mr. McClafferty stated he counted 17 homes.

Commissioner Zolecki stated there is none west of Brown Park.

Mrs. Valone stated staff did not include the south side of Logan Street as part of the study area because there are not alleys dedicated there. She showed on the overhead the two areas that are comparable because they both have alley access.

Mr. McClafferty said they are on the same street and in character of the neighborhood.

Mrs. Valone stated they do not have the same requirement with regards to alley access.

Mr. McClafferty said the Commissioner was talking about an attached garage and there are attached garages on that side of the street.

Mrs. Valone showed on the overhead where there are some attached garages.

Commissioner McGleam asked if there were attached garages on the south side of Logan.

Mrs. Valone stated there were but they do not have alley access so they would not be treated the same in the R-4A.

Chairman Spinelli said if this gets a positive recommendation, the neighbor to the west that is not using the old existing apron, he would want to see that whole entire apron removed. Between the existing apron, the new apron and the existing apron to the east there would be about 35 feet of concrete across the 50 feet of frontage. He suggests if this gets a favorable recommendation or if the Village Board approves it he suggests that the existing apron from the neighbor to the west gets completely removed. If its barrier curb then that should get replaced so there is only a curb cut in the neighboring for this parcel. If it is not done then there is too much concrete on Logan in this location.

Chairman Spinelli asked if there were any further questions for the applicant. None responded. He then asked if there was anyone in the audience that wanted to speak in regards to this public hearing.

## **Public Comment**

Philip Steck, 28 E. Logan Street, said he would like to make a clarification about the alley. It has always been a dedicated alley and will not be created as an alley. He has lived there for 45 years at that particular residence. That alley used to go all the way up to Brown Park. Before it was the park it was a large ravine and that is why the alley stopped there. The alley was gravel and the people next to 15 E. Logan weren't using it. The alley was not being maintained by anyone so the grass grew up. If you dig up a layer you will probably find the stone. To put more gravel down it will not cost \$10,000 to \$15,000. He does not think it is a hardship, but it is for the people that are on either side of that lot being developed. He feels if a house is going to be built there then the access should be off of the alley otherwise it will not look right.

Tony Frank, 15 E. Logan, asked if they had an a elevation of the house so they could see what they were thinking of building.

Mrs. Valone showed on the overhead the elevation.

Mr. Steck asked what the current code was for the side yard setback on a 50 foot lot.

Mrs. Valone said it is 12% of the lot width which would be 6 feet.

Benton Bullwinkle, 37 E. Logan Street, stated his home is one of the older homes in the neighborhood. At one point he had owned the two adjacent lots. The homes were built before the alleyways were set. The home adjacent to him has a similar garage in front and was built during the 80's. He had met the man who subdivided the lot and at that point the UDO was not in place. At that point the R-4A was whatever happened. On the other side of him, he had found out that the builder had built the house in the wrong spot, paid the fine and left it where it was at. He said in regards to the character of this street, he would hope that the UDO would be enforced the way it is written. There is a lot of redevelopment interest in Lemont and that is wonderful. However, the character of this neighborhood needs to be respected especially in regards to the use of the alleys. His parents are looking to buy 18 E. Custer which is directly behind the subject property. He is aware that the owner has been mowing the alley.

Madeline Bullwinkle said she feels that the alley would be a great asset. Her husband is currently in a wheelchair so driving to their current garage from Custer Street is daunting. There is a steep incline so putting in a fresh garage with access from the alley would be much easier.

Chairman Spinelli asked if there were was anyone else in the audience that wanted to speak in regards to this public hearing. None responded.

Commissioner Andrysiak stated he has been up and down that alley and you cannot turn around in that alley without trespassing onto someone's property. That alley ends right at the park where kids might become a hazard. This is the last lot in the

neighborhood and we are trying to match it to some of the oldest homes in the neighborhood. The lot is very desirable and land is very limited in Lemont so they will be tearing down houses. He knows when he passes someone is going to buy his house, most likely tear it down, and build something huge there. The owner talks about a hardship with having to put in the alley but what about when he goes to sell the house. When he puts a detached garage in the back the 100 year old tree is gone and so is the backyard. He feels they will take a hit of \$10,000 when he tries to go to sell it because there is no yard. He feels that this house is not that big of an upgrade to the neighborhood.

Commissioner Sanderson asked why this house is not that big of an upgrade.

Commissioner Andrysiak said around the corner there is a \$600,000 house that has been there for 40 years. This is a very mixed neighborhood. If a developer has to build a detached garage on lots to create what is not a desirable house anymore it will be like Berwyn bungalows. It will help if you upgrade on an infill neighborhood.

Christina Nunez, 21 E. Logan Street, stated they are a young couple that is recently married and they bought a house next to the subject property that has a detached garage. She said they are part of the new generation and that did not stop them from buying a house with a detached garage.

Madeline Strapple said if that is the logic you are going to use then that just creates a slippery slope. Next time someone else sells a house that is too small then let's just knock it down and build a bigger house with no yard. She stated she disagreed with what Commissioner Andrysiak had stated.

Gary Hartz, 18 E. Custer, stated he is the owner of the house to the north. He asked if they knew what the width of the house was that they were intending on building.

Mrs. Valone said it is about 35 to 36 feet.

Mr. Hartz stated it is hard for him to decipher the way it is situated if any of the landscape would dictate the water coming back to Logan. He does not agree with the engineer that stated there was no problem with the water being controlled right now. In 1991 or 1992 when Brown Park was developed the contractor was from Milwaukee. The contractor and Bob Porter were there admiring the work that was done. They took all of the dirt and back filled it all the way to the top of the wall and pitched it right down to his lot line. He had talked with Mr. Porter and the contractor about where the water was going to runoff to and did not get any answers. In the spring water was pouring in through the masonry wall of the garage and through the front door. When he talked to Mr. Porter about it he had said that they needed to do something about that. That was 25 years ago and that is why the water stops where it does now. If the subject property does not pitch back towards Logan then every bit of the rain will come down and it will be accelerated because of the driveway in the back. He said he brought in six yards of dirt to build the berm because water was

coming across his whole back yard. He had to tear out the garage floor because so much of the water was coming through. There is a water problem there and there needs to be a catch basin at the end of the alley were it would extend to.

Mr. Hartz said he is not sure where the downspouts and sump pump are going to drain out for this house. However the Village directs the developer to put in that alley, he hopes that there is some kind of drain that is put in and not some hand dug shovel drain that there it is right now. There is a water issue now. Because of that double apron that Chairman Spinelli had talked about a neighbor of his had four inches of water in his basement. The neighbor had to build a trench around his house. This is only going to bring them back to the original problems.

Ken McClafferty stated what the gentleman is saying is what they are trying to prevent. By putting in an alley it will cause problems to the properties to the north. There will be less places for the water to go and more of a mess with the snow plows piling up the water.

Margaret Crowell, 8 E. Custer, said she will be sharing the alley with the property. Speaking about water problems, there has been water problems in that alley for as long as she could remember. It was just a stone alley when they first moved in. There was at one time a big pipe buried in the back that carried storm water down towards the park. They recently paved the alley about two years ago. The paving of the alley did alleviate a lot of the water problems on the north side and they also installed that small berm. Every time you build another house uphill of a house you are going to have drainage problems.

Mrs. Crowell stated she feels it is important that Lemont focuses in on its historical district. There is not a large amount and they need to maintain it. There are many places in Lemont to build rather than one block away from the historic district and be non-conforming. The majority of the houses on that street are one-story homes and are like Berwyn bungalows. Some of us do like our Berwyn bungalows. There are lovely homes in Berwyn that have detached garages that are being bought out by young couples. There have been other people in their neighborhood that have rebuilt and they have been required to put in a detached garage. Also, have a 2,000 square foot house in this neighborhood when most of the homes are 1,000 square feet is out of character. It is important to maintain the character of the neighborhood at the same time they make some accommodations for redevelopment. These accommodations have been written into the R-4A district and it should be followed.

Mr. Bullwinkle said they are talking about a 1,900 square foot house that is going to create runoff and alley. There is going to be runoff from any development on this lot. He believes that the only thing that is going to protect this neighborhood is the UDO and it should be honored to the full effect.

Joe Forzley, 22 E. Logan, stated he does not see how all this can be built on this property. If someone on the west has a roof problem, to get a ladder up there you are on another person's property.

Commissioner Andrysiak asked what types of water problems is the property to the north having currently with the vacant land. Is the neighbor thinking that a detached garage with the alley would be less detrimental.

Mr. Hartz said you can't really tell without having a grading scheme. He is not sure if having the garage in the front attached would put the grading back instead of the sidewalk all the way back like it is now. If it does then it might help some because there would be two downspouts that would go to the front and drain onto Logan Street.

Chairman Spinelli stated the site plans that they have right now show that the drainage will be going to the north. The only thing he can decipher from the site plans is possibly if the driveway, if it was in front, would drain to Logan but everything else is going to go north.

Mr. Hartz said by having the driveway coming in from the alley there is going to be more water going to the north.

Chairman Spinelli stated whether the garage is in front or the back there is going to be drainage to the north.

Mr. Hartz said the problem is going to be greater by having the alley because there will be no grass to impede the water running off. The water will runoff until it hits the berm of the park. Then in the winter with ice and snow buildup the water will run into the foundation of his garage. He is sure that if the alley is put in without a catch basin then it is going to be a hard time for all the people to the north.

Mr. Steck stated the lot slopes to the north. If a driveway is going to drain towards Logan then the house would have to be eight feet higher than the house next to it. If the alley is not required, that is still a dedicated alley so the owner of that house has every right to drive down that alley and park behind that house.

Chairman Spinelli said they would be able to use the alley but they could not park in the alley.

Ms. Franck stated that they are talking about water concerns when they are putting a home 7 feet from the property line. She asked where is the water going to go that comes off of the sides.

Chairman Spinelli said this lot would have to make provisions to carry that water away from their house.

Chairman Spinelli asked if there was anyone else that wanted to speak in regards to this public hearing. None responded. He then called for a motion to close the public hearing.

Commissioner McGleam made a motion, seconded by Commissioner Andrysiak to close the public hearing for Case 16-05. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

### **Plan Commission Discussion**

Chairman Spinelli asked what the maximum impervious coverage is for the R-4A District.

Mrs. Valone stated it is 65% of the total lot area in the R-4A.

Chairman Spinelli asked if the detached or attached was less than the 65%.

Mrs. Valone said either detached or attached must be at or below the 65% impervious coverage.

Chairman Spinelli asked if the Village Engineer or staff researched whether there was storm sewer down that alley. He asked if there were any atlases that would show that.

Mrs. Valone stated the Village Engineer has not investigated that.

Chairman Spinelli said whether it is this proposal or another building on this lot it will have a negative impact to the residents to the north. If this moves forward and possibly prior to getting an actual building permit, the Village Engineer or Public Works should look to see if there something in this alley. It is only 50 feet from the park it might only take a 100 foot storm sewer to get a little catch basin back there and all the roof drainage and side yard swales can go to the catch basin. This way there is no negative impact to the neighbors in regards to runoff. He stated however this proceeds he is requesting that the Village Engineer or Public Works look to see if there is a storm sewer in the alley or whether the drainage ditch in the park could accept water from here.

Commissioner McGleam asked whether the Village has installed permeable alley paving anywhere.

Mrs. Jones stated not to her knowledge.

Discussion continued in regards to cost of permeable paving and the placement of the garage.

Commissioner Zolecki said they are here to see if there is consistency demonstrated for the three requirements for the UDO, which he finds hard that any of them feel that they do. Comments from both audience and the Commission as to whether this development is a desirable project is a very subjective comment. There is a protection put in place for these areas and these types of homes are readily available in other areas. The R-4A are the smallest lots so that is why the side yard requirements are the smallest there are. Mistakes may have been made on these lots but that is why they are here now and the protection is put in place.

Commissioner McGleam stated in staff report there is mention of a second option for approval which would include a detached garage with a side drive off of Logan Street. He asked do they need to decide which option they are wanting to vote on.

Chairman Spinelli said the site plan that they have in front of them, with having seven foot side yards, he would not be sure how they would get a garage along the side. The builder would end up losing an additional eight feet of house.

Mrs. Jones stated the point of that revision was though staff feels the standards for the variation has not been met. However, if the PZC felt otherwise, a detached garage in the rear of lot would be more in keeping of the area than an attached front load garage.

Commissioner Sanderson said he agrees with Commissioner Zolecki. He has done some building in Hinsdale and they encourage detached garages. He disagrees that this is an outdated development style by having a detached garage. They have heard from some of the members of the community and feel that they echo that. There is talk about losing the rear yard but he feels if it is in the front then you will be losing the front yard. He thinks having a detached garage with alley access makes sense.

Commissioner Kwasneski stated he has lived on the street for over 20 years and feels that the character is most important thing to preserve. He agrees with Commissioner Sanderson.

Chairman Spinelli asked if there were any further comments or questions. None responded. He then called for a motion of recommendation to the Mayor and Village Board.

### **Plan Commission Recommendation**

Commissioner McGleam made a motion, seconded by Commissioner Sanderson to recommend to the Mayor and Village Board of Trustee approval of Case 16-05 Logan Street variation with one condition:

1. The Village work with the property owner on a potential permeable alley system.

A roll call vote was taken:

*Ayes: Andrysiak*



*Nays: McGleam, Sanderson, Kwasneski, Zolecki, Spinelli*  
*Motion denied*

Commissioner Kwasneski made a motion, seconded by Commissioner Sanderson to authorize the Chairman to approve the Findings of Fact for Case 16-05 as prepared by staff. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

**B. 16-06 13769 Main Street Special Use and Variation**

Chairman Spinelli called for a motion to open the public hearing for Case 16-06.

Commissioner Kwasneski made a motion, seconded by Commissioner Zolecki to open the public hearing for Case 16-06. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

**Staff Presentation**

Mrs. Valone stated that Fornaro Lot, on behalf of the contract purchaser Main Street Lemont, LLC, is requesting a special use to allow for parking and storage of trucks and trailers at 13769 Main Street. The applicant is also requesting a variation from the UDO to allow for the proposed detention ponds on the site be gravel rather than sod. Staff is recommending approval with conditions for the special use and denial of the variation.

The subject property is currently being operated for the stockpiling of materials, processing of concrete and asphalt, and office for K-Five Construction Corporation. The applicant is purchasing the property to relocate their trucking company. The site is proposed to be used for parking of trucks and trailers. The site plan indicates parking stalls for 156 trucks. The existing 14,000 square foot office building will be used for administrative and business operations for the applicant's business. The existing building to the south of the building will be used for truck maintenance. The majority of the west half of the site is currently stockpiled materials for K-Five. She showed the site on overhead. K-Five has applied for a site development permit to pave the site in preparation of the truck parking and storage. This paving triggers stormwater detention requirements for both MWRD and the Village. The site already has ample aggregate material stockpiled from K-Five, thus the applicant is proposing that the detention ponds be constructed on non-compacted aggregate material that will not support being sodded.

Mrs. Valone said she will first talk about the special use for the truck and trailer parking and storage. The proposed special use is compatible with the neighboring

existing land uses. Properties to the south and west are undeveloped property and the property to the north is the Canadian National railroad. The properties to the east is developed with three buildings for industrial businesses. The proposed truck parking is situated on the west portion of the subject property and the existing buildings are along the east side of the property. Thus, the use is consistent with the existing properties as the office building and out buildings are near the neighboring industrial businesses' building to the east and the trucks are parked/stored by the undeveloped parcels.

The applicant has indicated that the truck traffic for the site will be restricted to Main Street east of the subject property and Route 83. The applicant has submitted a traffic study modeled after another larger facility in Melrose Park. The results indicate that the proposed truck traffic and trailer storage will generate a significant amount of traffic in the area. It is anticipated that the great majority of the site-generated traffic will be traveling to/from the east on Route 83 given its proximity of I55. The proposed traffic will result in an increase of less than two percent, which their traffic consultant has indicated is insignificant and will not be perceived by the drivers in the area. The proposed use's traffic can be accommodated by the adjacent roadways because the existing traffic that is already much higher than the proposed generated use.

The applicant has indicated that other than the requested variation for the detention facilities, the subject property will comply with the required landscaping for M-3 districts. The UDO requires M zoned properties along a public street to have either two plant units per 100 linear feet of street frontage or have a fence with a minimum of 95% opacity and a minimum height of six feet and at least one plant unit per 1200 linear feet. The property has approximately 387 feet of frontage along Main Street. The existing tree survey for the area along Main Street depicts 105 trees; 19 of them are located on the applicant's property, are in fair or good condition, and are non-prohibited species per the UDO. Fifty-nine of the trees are located in IDOT's right-of-way. Of the 19 trees on the subject site, 17 of them are located in the east 200 feet of frontage from the entrance of the site. The UDO requires plant units per 100 feet which are consistent of accommodations of plant types. The existing 19 trees would exceed the minimum number of canopy trees required for the site if the placement was not clustered within the first 200 feet of frontage along Main. Additionally, four of the 19 trees are on or near the boundary line with Main Street which has a right-of-way which could potentially be removed by IDOT at any given time. The remaining 180 feet of frontage does not achieve all the minimum required landscaping requirements per the UDO.

Mrs. Valone stated so based on these considerations as well as the topography conditions, the existing vegetation within the Main Street right-of-way, staff recommends accepting the applicants existing canopy trees as fulfillment of the plant unit requirement for the first 200 feet of frontage along Main Street. For the remaining 187 feet frontage along Main Street staff recommends that the applicant add an additional nine juniper trees to achieve the UDO minimum required plant

material. Also, to provide some all season screening to the site. In addition to preserving the 19 trees credited and planting nine new junipers, staff recommends that the applicant preserve all the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species on the site.

The applicant is proposing to convert the existing stockpile areas into truck and trailer parking/storage stalls. The parking area is located in the west and northwest portion of the subject property which is buffered from Main Street by neighboring undeveloped properties. The proposed entrance to the truck parking is located 200 feet southwest of the office building. She showed on the overhead where the buildings and parking were located and how truck traffic will flow through parking lot. The existing eastern portion of the site will remain as is with minor paving improvements. Thus, the parking/storage use is buffered from Main Street and the undeveloped parcels to the east. Staff recommends that the truck parking be restricted to the area shown on the parking layout, preventing trucks from being parked on the eastern portion of the subject property.

Mrs. Valone said she will now go through the variation for the detention ponds. The UDO states the variation must be consistent with the following three standards to be approved. The first is that it is in harmony with the general purpose and intent of the UDO. There are only two components out of the eight with the first being ensuring adequate light, air, etc. The proposed variation would not negatively impact. The second is maintaining and promoting economically vibrant and attractive commercial areas. The proposed variation would allow for visually unappealing detention ponds. The site is separated from Main Street by undeveloped vegetated spaces that currently act as a buffer. However, the site is proposed to be raised and the neighboring properties could develop in the future revealing more of the site to Main Street. Additionally, one of the goals of the Lemont 2030 Comprehensive Plan, Community Chapter, is to develop guidelines for industrial development. The UDO has not yet been updated to include such standards, however, minimal aesthetic appeal is still important for M Districts. Thus, the variation for the detention ponds does not promote attractive commercial/industrial area.

The second standard is that the plight of the owner is due to unique circumstances, and thus strict enforcement of the UDO would result in practical difficulties. The first factor is that the physical surroundings, shape, or topographical conditions result in a hardship. The subject property is located north of Main Street and south of the railroad tracks. The properties to the east are heavily vegetated and are at a slightly higher elevation than the subject property however, they are currently undeveloped. The applicant has proposed two non-compacted aggregate detention ponds, one located in the west corner of the property and the other in the northwest corner of the property along the railroad tracks.

The top soil is rocky due to the topography of the area and the stockpiling of construction materials, which has removed most of the top soil from the site by the nature of its use. As such the site is not conducive to grass or other vegetation. However the property is proposed to be raised through the use of non-compacted aggregate fill to construct both the parking area and the detention facilities. As the fill has to be added to the subject property, a portion of the fill could be top soil, which would allow the detention ponds to be sodded. There is an existing sodded detention pond located on the property near the east property line. She showed on the overhead the location of that detention pond.

Mrs. Valone said the Village Ecologist reviewed the submittal and commented that the information provided does not show that implementation of vegetated detention facilities can be conclusively ruled out. The proposed plans indicate that two feet of fill will be added to the site. If the applicant uses clean fill it should be possible to get vegetation to establish even if the existing soils create a restrictive layer. Additionally, the applicant has not submitted any soil borings to indicate that bedrock is an issue. The applicant's report states that the purpose of using the non-compacted aggregate material is to promote infiltration into the soils, thus the soils must have some capacity to percolate.

The second factor is the conditions upon which the petition for variation is based would not be applicable generally to other property within the same zoning district. The industrially zoned properties to the west and south are undeveloped and heavily vegetated. The neighboring properties to east are developed and do not appear to have detention ponds. The Maley Road Industrial Park area, which is also zoned M-3, are serviced by wet detention basins. These wet detention basins are no longer permitted by the Village. Art Logistics, another industrial zoned property, roughly a mile from the subject property, is under construction and will have a sodded detention pond.

The third factor is granting of the variation will not be detrimental to the public welfare or injurious to other property. At the moment with the undeveloped properties it is not. If the properties were developed it would create some unintended visual impacts on the neighboring property. The fourth factor is that the variation will not impair an adequate supply of light or air to the property, which it will not.

Mrs. Valone stated the last standard for granting variations, is it will not alter the essential character of the locality. The site is currently 91% impervious. The detention ponds being sodded would reduce that lot coverage and increase green space. The neighboring developed properties are similar in lot coverage; however, the neighboring properties either have detention facilities or wet bottom basins. The proposed variation is not consistent with the essential character of the existing detention pond on the property that is dry detention and sodded.

The Village Engineer had no objections to the use, or the use of the aggregate detention facilities. The Fire District did comment that most of their comments made

relate to items during site development. The truck repair building may require the installation of a sprinkler system.

Mrs. Valone said the proposed variation for the detention ponds is not consistent with the neighboring developments or the existing dry detention pond on the subject property. The applicant has not demonstrated a hardship based on the physical characteristics of the property. The UDO requires that the applicant demonstrate consistency with all three. Staff finds that the standards are not met and thus recommends denial of the variation.

The applicant has provided preliminary information to demonstrate that the proposed special use for truck and trailer parking will not affect traffic conditions. The applicant will comply with landscaping screening requirements for the property. The proposed land use is consistent with the existing surrounding properties. Thus, staff recommends approval of the special use with the following conditions:

1. The applicant shall preserve the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species trees on the site.
2. The applicant must also submit a landscape plan for the site including the requirements from condition 2 above.
3. No parking or storing of trucks and trailers outside of the designated parking area, as shown in the submitted Parking Layout Plan.

There was one final condition that was shown in the staff report that has been satisfied. The applicant has turned in a detailed traffic study which confirms all the preliminary findings. She stated this would conclude staff's presentation.

Chairman Spinelli said knowing that MWRD promotes infiltration type systems, looking at this he is seeing it as an infiltration basin with a controlled release. So not necessarily infiltrating into the ground but rather using the voids in the stone for storage and then controlling the release. He stated it was mentioned about detention basins currently being built or designed down the street that have soils. He asked if that was being designed as infiltration or regular stormwater detention.

Mrs. Valone stated Art Logistics is being developed just east of the property. They are using dry detention basins. They were permitted before the WMO came through, so they are under different requirements.

Chairman Spinelli asked if MWRD had been contacted.

Mrs. Valone said they have been contacted and she will let the applicant speak in regards to that. They did have a pre-application meeting with them and they did go

through a number of these items. From MWRD perspective they are relatively comfortable, but again from a local level they do have these requirements.

Chairman Spinelli stated if there are conflicting requirement between the municipal level and MWRD, where is the Village going to go with this. Ultimately they have to comply with MWRD.

Mrs. Jones said it is her understanding from the Village Engineer that either type can meet the WMO requirements.

Chairman Spinelli stated there still has to be volume control with MWRD and a typical dry detention basin will not meet volume control. A modified detention basin would meet it. He sees an area that is already gravel and we are making them bring in soil to grow grass and if they are using infiltration with using the voids of the stone for storage it seems counterintuitive to fill those voids with soils.

Mrs. Valone said she saw from the Village's Ecologist comments they are bringing in quite a bit of soil so there is an opportunity there. The applicant has indicated that it will be aggregate soil. The Village Ecologist is indicating that there is no reason why part of it could be aggregate and the other be clean fill to provide for some type of vegetation.

Commissioner McGleam stated in regards to the KLOA traffic study, there is a table number 3 with estimated development generated traffic volumes. It shows that the average peak hour trips per day in the morning would be 8 inbound with 11 outbound and weekday evening with 11 inbound and 11 outbound. That is giving a total volume for the entire day of 41 trucks. He thought the capacity was 250.

Mrs. Valone said in their preliminary comments they indicated that they would like to store over 100 to 200. From their actual site plan layout it indicates 156. If the question is how many are parked there and how many are leaving then she would say let the applicant speak in regards to this.

Chairman Spinelli asked for the applicant to come up and make their presentation.

### **Applicant Presentation**

Mark Scarlato, attorney with Fornaro Law, stated he is speaking on behalf of the applicant for this matter. In addressing the special use application they are in agreement with staff's recommendations and will do everything that they need to do for the landscaping. In regards to the actual lot itself, if you look at the Village's 30 year plan it indicates that area as being industrial. The use that they are proposing is completely in line with the use for the area being a truck/trailer parking/storage facility. There may be 150 trucks there but they will not be all in use all the time every day. The amount of trucks going in and out will be very limited. It's a storage

facility so there is not going to be any change of materials or cargos. There may be a change of trailers between trucks once in a while.

He said there are several buildings on the parcel with one being 14,500 square feet. That building will be utilized all or in part for the trucking business with dispatch and management. There are a number of auxiliary structures on the property. They are expecting at least some of them to be used for repair. The Fire Department had indicated that sprinkler systems may be necessary. If they are then they will do everything they need to do in order to be compliant with code. They are expecting to have approximately 50 employees that will not all be there at the same time. There will be 24 hour truck security. They do not anticipate that they will be storing tankers there. There may be some parking spaces that will be leased out to other companies or fleets, but not independent operators. The applicant themselves have over 15 years of experience in the trucking business with these sorts of uses. Access routes to the property is going to be the quickest route which would be I55 to Route 83 to Main Street.

Mr. Scarlato stated in regards to the request for variation on the detention pond. They agree with the Village with the noble cause of providing green space and making things look better. The problem here is the practicality of it. The apparatus isn't in place to support the sod that they are going to put there. If you put fresh clean dirt there and fill it with sod then the sod is going to die, weeds will invade, and the water to be able permeate will be greatly reduced. One of the problems that has been illustrated by the Village is that there is already invasive species that they don't want growing on the property. With this you are just giving them the perfect opportunity to grow and establish in those detention ponds. He said this would conclude his presentation and he will open it up to questions that the Commission might have.

Chairman Spinelli asked if the intent is for most of these trailers to be empty. His concern is that even if they have 24 hour security, if there is product being stored overnight, the security will be sitting at the entrance which will not be helpful if someone walks onto the property on the far west side. He asked if there are plans to have a mobile patrol to secure the lot after hours and evening especially if there is product being stored overnight.

Mr. Scarlato said he does not believe the product will be stored on site overnight, mostly because of the reason he has stated. In regards to a fence, the property has some issues with elevation. If you're looking to the west frontage on Main Street there is a drop of about 10 to 15 feet so if there was going to be a fence on the property it would have to be over 20 feet to be effective. On the eastern portion on the frontage Main Street they might put up a chain link four to five foot fence or a cable on pull for about 600 feet. The security personal will be someone who is patrolling the entire area.

Chairman Spinelli asked if there were any restrictions for hours of operation for this district.

Mrs. Jones stated no there is not.

Mr. Scarlato said they are anticipating 7 am to 8 pm.

Commissioner Andrysiak stated with a special use they should be provided with a lot of information. What he is hearing is that they are hauling out of there freight, there will be repairs with mechanics, and they will be selling and leasing. He asked if they have all their proper licensing.

Mr. Scarlato said they have all the appropriate licensing. They have already submitted the business license application.

Commissioner Andrysiak asked when they are closing the Lyons facility down and moving to Lemont full time.

Mr. Scarlato stated it depends on whether if they get the special use but they are hoping quickly.

Commissioner Andrysiak asked how they know that they will not be storing tanker trailers there with product in them overnight.

Mr. Scarlato said it is specifically addressed with staff that they are not going to store tankers. It will also be part of a condition with a lease.

Mrs. Jones stated as part of the special use they could include a condition that no hazardous material be stored on the facility. This has been done with other facilities.

Commissioner Andrysiak asked if they are going to be washing and changing oil on the trucks.

Mr. Scarlato said there will be a repair so it might include changing oil. They would need State licensing for that. This is just the first step in a long process.

Commissioner Andrysiak asked if sales tax would be generated for Lemont.

Mr. Scarlato stated yes if there is sales of trucks and leasing.

Chairman Spinelli asked if the Commissioners had any further questions. None responded. He then asked if there was anyone in the audience that wanted to come up and speak in regards to this public hearing.

### **Public Comment**

Frank Jemsek, Cog Hill Golf Club, said he is not opposed but he does have some concerns in regards to their clients that might exit that way. He suggests that an



independent traffic study be done, then at that time it would be the time to either approve or disapprove. His concern is that there might be a safety issue if intersections don't line up. With a traffic study they could look at this and help prevent any safety concerns.

Rick Sniegowski, Village Trustee, stated it will be his intent to recuse from any voting as a Trustee. Tonight he is here representing his company. Whenever his company is involved with anything in the Village he does recuse himself. His company is the seller and they do have a vested interest. Their plant can produce 400 tons in an hour of material and typically a truck can carry 20 tons. That is 20 loads of material per hour going out minimally. Additionally, there are 20 trucks coming back in so they could pick up material and there is also trucks bringing in raw materials. There could be 80 trucks in an hour if they are in a full operation. So to address Mr. Jemsek's concern, he feels that this use will not put as many trucks into use as their company could have.

Mr. Sniegowski said addressing Commissioner Andrysiak question in regards to granting a special use permit. When granting a special use permit it doesn't mean that it covers all special uses. One of the special uses that is going to go away is the special use for operating the asphalt plant. If they wanted to continue that then they would have to reapply for a special use for an asphalt plant separately as a condition to the special use. All things that are allowed under a special use aren't granted just because they have a special use. Each individual one would have to be applied for.

In regards to the detention/retention, the problem is that they don't have a current standard to apply to what is allowed by the new MWO. They do have some grass bottom detention areas, again they would have been functioning the same as Art Logistics because it is prior to the change in law. What is happening now is that they have to have a control release which means the ground itself is holding the water. What they are trying to do is if you look at page 17 in staff's report you will see what an infiltration basin looks like which is different from both of their standards. So infiltration basin is built flat because the rock itself can hold 36% voids in volume of water within itself. So instead of building a plastic tank, you fill it with rock and the open areas of the rock holds the water.

They have submitted some revised drawings, but on there is a calculation of what was the prior pervious retention and impervious areas versus post development. The previous pervious area is 52,000 square feet which represents 9%, which is existing. Post construction the pervious area will be 20% which represents a 120% gain. So it is still over the 70% but they are at 122% more than what is existing out there today. In addition to that they have this controlled containment of water that is still open to evaporate. Most of the area where the parking stalls are at is all paved now which will reduce any dust in the air. To the west of that will be this bigger stone which will be all open without dust. If the buyer wants to have that paved then part of the deal is that they will pave that for them. They are hoping to build this right away.

Chairman Spinelli asked if a formal submittal been sent to MWRD.

Mr. Sniegowski stated they will not give them anything official because they are waiting for this approval. They have an email stating that provided that it is approved by the Village they will let the operation start.

Chairman Spinelli asked so with preliminary review they have no objections with the proposed detention.

Mr. Sniegowski said they have no objections to the concept but there may be some technical issues to address.

Chairman Spinelli asked if there was anyone else in the audience that wanted to come up and speak in regards to this public hearing. None responded. He then called for a motion to close the public hearing.

Commissioner Sanderson made a motion, seconded by Commissioner Zolecki to close the public hearing for Case 16-06. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

### **Plan Commission Discussion**

Chairman Spinelli stated as far as the variation he understands that our ordinance requires grass bottom detention basins, but the new MWRD ordinance requires some form of infiltration control. They actually promote this type of design. As an engineering perspective he feels it will be negative to try and introduce grass on top of stone. As far as the special use, he does not have an issue. As far as truck traffic it has been indicated that it will be a benefit with a reduction in trucks. As far as the variation, because this ordinance is new with MWRD it is something that the Village's Engineer need to look at and try to address how to resolve these conflicts when ordinances change because MWRD governs that parcel along with the Village.

Commissioner Sanderson asked for staff to go over their recommendations.

Mrs. Valone said staff is recommending approval of the special use with three conditions.

1. The applicant shall preserve the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species trees on the site.
2. The applicant must also submit a landscape plan for the site including the requirements from condition 2.
3. No parking or storing of trucks and trailers outside of the designated parking area, as shown in the submitted Parking Layout Plan.

As far as the variance staff was recommending denial.

Chairman Spinelli asked if the parking stalls are completely contained on the hard surface.

Mrs. Valone stated they are.

Chairman Spinelli asked if there were any further questions or comments. None responded. He then called for a recommendation to the Mayor and Village Board.

### **Plan Commission Recommendation**

Commissioner Sanderson made a motion, seconded by Commissioner McGleam to recommend to the Mayor and Village Board to approve the special use permit for Case 16-06 with the following conditions:

1. The applicant shall preserve the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species trees on the site.
2. The applicant must also submit a landscape plan for the site including the requirements from condition 2 above.
3. No parking or storing of trucks and trailers outside of the designated parking area, as shown in the submitted Parking Layout Plan.

A roll call vote was taken:

*Ayes: Sanderson, McGleam, Kwasneski, Zolecki, Andrysiak, Spinelli*

*Nays: None*

*Motion passed*

Commissioner Sanderson made a motion, seconded by Commissioner Zolecki to recommend to the Mayor and Village Board to approve the variation request for Case 16-06. A roll call vote was taken:

*Ayes: Sanderson, Zolecki, Kwasneski, McGleam, Andrysiak, Spinelli*

*Nays: None*

*Motion passed*

Commissioner Kwasneski made a motion, seconded by Commissioner McGleam to authorize the Chairman to approve the Findings of Fact for Case 16-06 as prepared by staff. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

## **IV. ACTION ITEMS**

None

TO: Planning and Zoning Commission

FROM: Heather Valone, Village Planner

THROUGH: Charity Jones, AICP, Planning & Economic Development Director

SUBJECT: Case 16-07 UDO Amendments

DATE: August 5, 2016

---

## SUMMARY

Attached is a table detailing proposed amendments to the UDO to address the provisions related to storage of campers and trailers in non-residential districts, and off street parking of vehicles, buses, and trucks. Revise the requirements for sidewalk construction, institute guidelines for natural areas establishment, and locational requirements for stormwater detention facilities. Additionally, update standards in the appendices of the UDO, zoning districts that allow vehicles related uses, and the definition of telecommunications tower. Words underlined in table are proposed additions to the text of the UDO and words ~~stricken~~ are proposed deletions. The amendments are organized by topic, rather than by chapter, to facilitate discussion.

## BACKGROUND

The proposed amendments revise the off-street parking requirements for all districts. The following definitions are for reference when reviewing the proposed revisions:

**Bus** A motorized vehicle designed and constructed to be operated by a driver and carry more than nine passengers.

**Construction Equipment** A self-propelled motorized vehicle not designed or used primarily for the transportation of persons or property and only incidentally operated or moved over a roadway, and designed and manufactured for the roadway construction, building construction, forestry and landscaping industries. "Construction equipment" includes but is not limited to: skid loaders, bucket loaders, ditchers, excavators, forklifts, backhoes, dozers, and commercial lawn care equipment. The term does not include equipment designed for personal residential use such as riding lawn mowers and snow blowers.

**Recreational Vehicle (RV)** Any building, structure, or vehicle designed and/or used for living, sleeping, or recreational purposes and equipped with wheels to facilitate movement and including pick-up coaches, campers, motorized homes, boats, trailers, and camping trailers not meeting the federal specifications required for manufactured home or mobile home.

**Tractor** A motorized vehicle designed and constructed to pull other vehicles, including, but not limited to trailers, semi-trailers, farm equipment or construction equipment.

**Trailer** A trailer is:

1. A vehicle so designed and constructed as to not move under its own power, but rather to be pulled by a powered vehicle such as an automobile, bus, tractor or truck. This definition of “trailer” also includes “semi-trailer.” A “semi-trailer” is a type of trailer without a front axle and/or where a portion of the weight of the trailer is supported by a dolly, landing gear apparatus, tail of another trailer, or by the fifth wheel or other portion of a tractor; or
2. Any vehicle or portable structure constructed so as to permit occupancy thereof for lodging or dwelling purposes or for the use as an accessory building or structure in the conduct of business, trade, or occupation.



TOPIC: Definitions Telecommunications Tower	Reason for Change
<p><b>Chapter 17.02 DEFINITIONS</b></p> <p><b>Telecommunications Tower.</b> A tower, pole, or similar structure that supports a telecommunications antenna in a fixed location, freestanding, guyed, or on a building or other structure. This definition also included structures supporting such equipment, <del>and attendant parking-, and small cell antenna structures.</del> <u>Small cell antenna structures includes an antenna, a structure designed to specifically support an antenna, and/or and appurtenances mounted on such a structure or antenna which is used or designed to be used, to provide wireless transmission of voice, data, images, or other information.</u></p>	<p>The current definition of telecommunications tower does not include the small cell equipment that is a recently introduced telecommunications design.</p>
TOPIC: Correction of section labeling	Reason for Change
<p><b>17.04.040 Public Hearing and Approval</b></p> <p><b>A. Record of Testimony.</b> The review body or person responsible for conducting public hearings on the applications required under this ordinance shall make an accurate and complete record of all testimony and exhibits presented during the hearing. The Planning and Economic Development Director shall provide staff support for this responsibility.</p> <p><b>B. Findings of Fact.</b> After conclusion of the public hearing, the hearing body or person shall prepare a recommendation including findings of fact based on a review of the hearing record. The Planning and Economic Development Director shall provide staff support for this responsibility.</p> <p><b>C. Continuance of Public Hearings.</b> At the discretion of the hearing body or person, a public hearing may be continued. For public notice requirements in conjunction with continuances, see § 17.04.050 of this ordinance.</p> <p><b>D. Relay to Village Board.</b> The Planning and Economic Development Director shall relay the recommendation and findings of the hearing body or person to the Village Board without delay.</p> <p><b><del>GE.</del> Village Board Action.</b> The Village Board shall</p>	<p>The labeling of these sections is simply a scrivener's error.</p>

<p>act on the application within 90 days following the receipt of the recommendation of the hearing body or person, unless the petitioner agrees to an extension. The Village Board may grant or deny the application or grant with modification, or may refer the application back to the hearing body for further consideration.</p> <p><b>HF. Costs.</b> The applicant shall be responsible for the Village's costs associated with the public hearing, including public notice, consultant fees, recordation and preparation of the public hearing record, and services of a court reporter. In order to ensure payment, the Planning &amp; Economic Development Department shall require the establishment of an escrow account prior to the public hearing. The escrow amount shall be based on anticipated costs associated with the application. Action on the application may be withheld pending establishment of the account or reimbursement of Village costs associated with the public hearing. The escrow account requirement may be waived by the Planning and Economic Development Director.</p>	
<p><b>TOPIC: Change the provisions relating to storage of campers/RVs and trailers for non-residential districts and off street parking of vehicles, buses, and trucks.</b></p>	<p><b>Reason for Change</b></p>
<p><b>D. Restrictions</b></p> <ol style="list-style-type: none"> <li>1. Unenclosed off-street parking spaces shall not be used for the repair, dismantling or servicing of any vehicles, equipment, materials, or supplies.</li> <li>2. Inoperable vehicles shall not be parked or stored in unenclosed parking areas.</li> <li>3. <del>In R districts,</del> the parking of vehicles on areas of the front yard other than a driveway is prohibited.</li> <li>4. <del>Trucks and other commercial vehicles with "C" through "Z" license plates, trailers,</del></li> </ol>	<p>The current restrictions for parking vehicles in residential districts are not clear and the restrictions are contained in two different areas in the chapter. This adjustment will provide clarity.</p>

~~recreational vehicles, construction equipment, tractors and boats shall not be permitted to park or be stored in any residential district except when located in a garage that substantially conceals them from view. Temporary parking on driveways in residential lots is permitted for a maximum of eight consecutive hours or 12 hours within a 24 hour period. A limit of one commercial vehicle with a "B" license plate is permitted to be parked on a residential lot.~~

**17.10.100 Off-Street Parking of Commercial Vehicles, Buses, Trailers, Trucks, Construction Equipment, and Recreational Vehicles in Residential Districts**

~~A. It is illegal to park or store the vehicles listed in this paragraph A on any lot in a nonresidential zoning district, except when located in a garage or other fully enclosed structure that substantially conceals them from view, for more than four consecutive hours:~~

- ~~1. Trailer.~~
- ~~2. Tractor.~~
- ~~3. Trucks and other commercial vehicles with "C" through "Z" license plates, or the equivalent thereof issued by any jurisdiction.~~
- ~~4. Bus.~~
- ~~5. Construction equipment.~~
- ~~6. Any class of commercial motor vehicle where, in order to be lawfully operated, the operator must possess a valid commercial driver's license.~~

~~B. It shall be unlawful for a property owner to allow the parking on his/her lot for more than four consecutive hours any of the vehicles listed in~~



~~paragraph A of this section.~~

~~C. The parking of vehicles listed in paragraph A of this section shall be allowed:~~

- ~~1. When the property owner or the tenant of a shopping center consents to the parking of said vehicles in areas clearly designated, marked and used for off-street loading zones on lots that contain an active principal use; or~~
- ~~2. When the subject lot is within an M district which contains an active principal use; or~~
- ~~3. When the subject vehicle is engaged in work related to an active building construction or site development project occurring on the lot; or~~
- ~~4. When the subject vehicle is owned or operated by the owner of the lot or a tenant of the lot; or~~
- ~~5. When the subject vehicle is engaged in the delivery of goods or materials for a tenant on the lot; or~~
- ~~6. When the subject vehicles are school buses and they are parked on lots owned or leased by a school district; or~~
- ~~7. When the primary or accessory use of the lot or a business on the lot is truck, trailer, or construction equipment rental or sales and service.~~

**A. Prohibited Vehicles.** It is illegal to park or store the following vehicles on any lot in a residential zoning district, except when located in a garage or other fully enclosed structure that substantially conceals them from view, for more than eight consecutive hours or 12 hours within a 24-hour period:

1. Trucks and other commercial vehicles

with “D” through “Z” license plates, or the equivalent thereof issued by any jurisdiction;

2. Recreational Vehicles;

3. Construction Equipment;

4. Buses;

5. Trailers;

6. Tractors; and

7. Boats.

**B. Commercial Trucks, “B” Plate.** A maximum of one commercial vehicle with a “B” license plate is permitted to be parked on a residential lot in open view. Any other commercial vehicles with a “B” license plate shall be located in a garage or other fully enclosed structure that substantially conceals them from view.

**17.10.110 Off-Street Parking of Commercial Vehicles, Buses, Trailers, Trucks, Construction Equipment, and Recreational Vehicles in Non-residential Districts**

**A. Boats and Recreation Vehicles.** In non-residential districts, it is illegal to park or store boats or recreational vehicles for more than four hours unless within a fully enclosed structure that substantially conceals them from view. The following boat and recreational vehicle parking is exempt from this requirement:

1. When attendant to an active Boat/RV sales, service, or storage use; and

2. Parking or storage as permitted by 17.06.120.C.5.

**B. Buses.** In non-residential districts, it is illegal to park or store buses for more than four hours

Off-street parking requirements in non-residential districts allow for parking of vehicles that are prohibited in residential areas and are not associated with a permitted principal use. For example RVs cannot be stored in open air in residential district; however, currently they could be stored in a shopping center parking lot.

unless within a fully enclosed structure that substantially conceals them from view. The following bus parking is exempt from this requirement:

1. When the subject vehicles are school buses and they are parked on lots owned or leased by a school district; and

2. Parking or storage as permitted by 17.06.120.C.5.

**C. Construction Equipment.** In non-residential districts, it is illegal to park or store construction equipment for more than four hours unless within a fully enclosed structure that substantially conceals them from view. Parking of construction equipment engaged in work related to an active building construction or site development project occurring on the same lot on which the equipment is parked shall be exempt from this requirement. Parking or storage of construction equipment attendant to the following active principal uses shall be exempt from this requirement:

1. Construction Contractor Office with Yard;

2. Landscaping / Nursery;

3. Lumberyard; and

4. Heavy Equipment Sales and Service.

**D. Truck, Tractor, and Trailer Parking in B Districts.** In B Districts, it is illegal to park or store trucks, tractors, or trailers for more than four hours unless within a fully enclosed structure that substantially conceals them from view. The following truck parking is exempt from this requirement:

1. Trucks with “B” or “D” plates owned or operated by the owner or tenant of the lot and operated for the delivery of goods or materials in support of

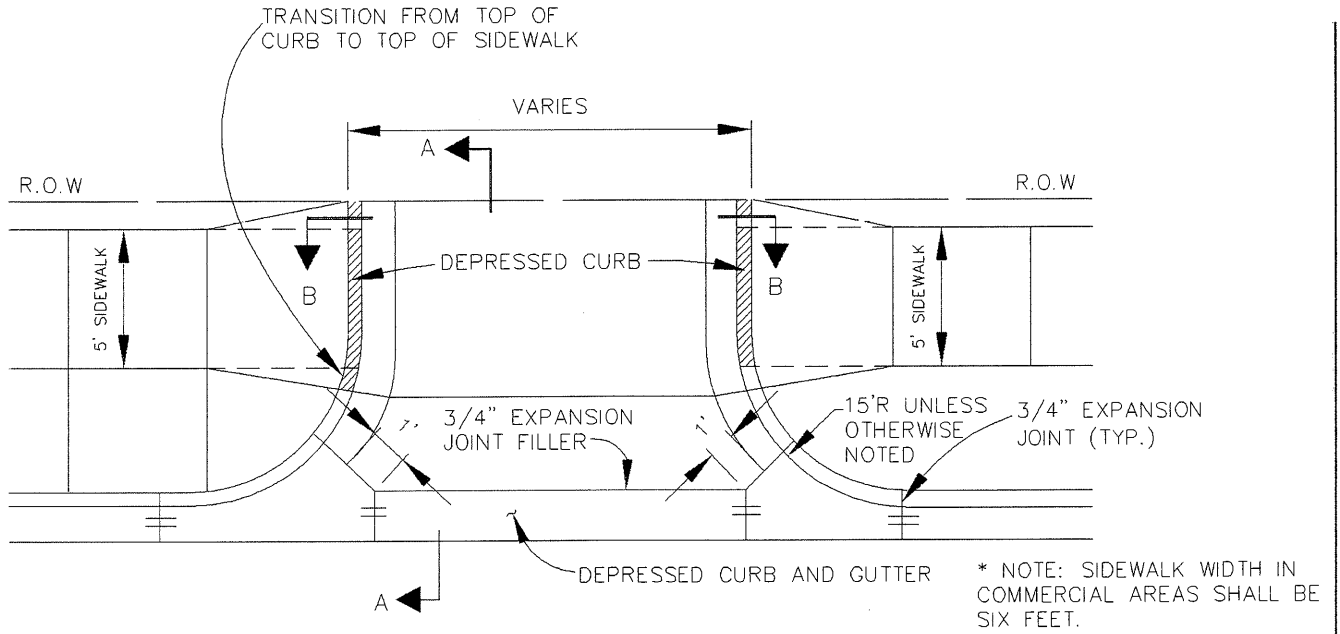
<p><u>the active principal use on the lot;</u></p> <p><u>2. Parking or storage of tow trucks when such trucks are located on the same lot as, and are operated in support of, an active principal use within the Vehicle-Related Land Uses category of Table 17-06-01;</u></p> <p><u>3. Parking or storage as permitted by 17.06.120.C.5.; and</u></p> <p><u>4. Parking of semi-trailers at designated loading docks for a period not to exceed 24 hours.</u></p>	
<p><b>TOPIC: Sidewalk construction</b></p>	<p><b>Reason for Change</b></p>
<p><b>17.26.110.K2 Installation Requirements</b>          For base preparation, a four-inch minimum of CA-6 curb base course shall be provided. The base course shall be trimmed or filled as necessary to provide a full depth of curb and gutter as shown in detail LS-2 of this chapter. (Detail sheets are found at the end of this chapter.) Prior to the concrete placement, in accordance with the testing and acceptance requirements indicated below. A <del>two</del> <u>four</u>-inch minimum CA-6 sidewalk base course shall be provided. Sidewalk subgrade shall be tamped or rolled until thoroughly compacted.</p>	<p>The section indicates the incorrect standard for a sidewalk base course.</p>
<p><b>TOPIC: Natural Guidelines for natural areas establishment and locational requirements for stormwater detention facilities</b></p>	<p><b>Reason for Change</b></p>
<p><b>17.29.020 Design Standards</b></p> <p><b>G. Naturalized Detention</b>          Naturalized detention basins are encouraged. Naturalized detention is intended to serve multiple functions in addition to flood prevention, including to pollutant removal and creation of wildlife habitat (where appropriate). <del>Naturalized detention shall:</del> <u>The design and installation of naturalized detention facilities shall comply with the standards found in Appendix H titled “Native Plantings Guideline” adopted here in and are incorporated by reference.</u></p> <ol style="list-style-type: none"> <li><del>1. Use exclusively plants that are native to Illinois or the Midwest; and</del></li> <li><del>2. Be used in conjunction with a detailed planting</del></li> </ol>	<p>The UDO currently allows for naturalized detention basins; however, there are few specific requirements and it does not provide enough information for users to understand/ deign these basins and areas. Additionally the standards outlined in the proposed Appendix H are designed to achieve requirements from MWRD’s WMO.</p>

<p><del>schedule, including provisions for a two-year installation and plant establishment period, and provisions for stewardship of the basin.</del></p> <p><b><u>K. Locational Restrictions</u></b>  <u>When Detentions areas contain retaining walls, such detention areas shall only be:</u></p> <ol style="list-style-type: none"> <li><u>1. On privately owned and maintained properties;</u></li> <li><u>2. In only M-districts, B-districts, or the R-6 district; and</u></li> <li><u>3. In only the interior or rear yards.</u></li> </ol>	<p>These restrictions prevent unsightly detention areas from being located in highly visible areas.</p>
<p><b>TOPIC: Vehicle related uses as permitted or special uses</b></p>	<p><b>Reason for Change</b></p>
<p><b>Table 17.06.01 Permitted and Special Uses in the Zoning Districts</b></p> <p>Auto body and repair: change Downtown district from permitted use to a special use and change M-1 from a special use to a permitted use.</p> <p>Boat/RV sales, service, or service- alter B-3 district to a special use and M-1 as a permitted use.</p>	<p>Restricting auto body and repair in the downtown is to ensure additional administrative review of this use as the Downtown District contains a number of historic buildings and because the intended purpose of the DD is to serve as a pedestrian oriented retail/entertainment mixed use district. Auto body shops may have certain incompatibilities with achieving the intended purpose of the DD.</p> <p>These larger recreational vehicles and boats have a significant impact on the appearance of the site. Thus in commercial districts they should be special uses to allow for administrative review and additional screening on these sites. Allowing this use in the M-1 district is more suitable as the M-districts are not highly visible commercial areas.</p>

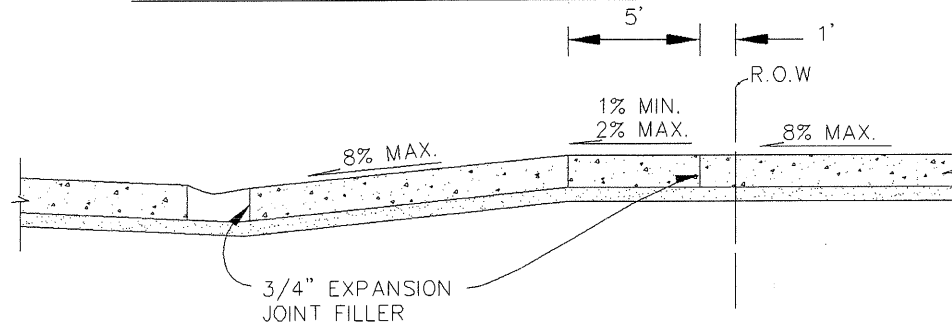


<b>TOPIC: Sidewalk construction</b>	<b>Reason for Change</b>
<p><b>Appendix G LS-5 Driveway Aprons and Alley Returns</b>                      (See Attachment 1)                          <u><b>LS-94 Street Sign</b></u>                      (See Attachment 2)</p>	<p>As stated previously the incorrect standard for a sidewalk base course are indicated.</p> <p>Currently the UDO does not contain standards for street signs.</p>
<b>TOPIC: Naturalize Areas Establishment Guide</b>	<b>Reason for Change</b>
<p><b><u>Appendix H Native Planting Guideline</u></b>                      (See Attachment 3)</p>	<p>The UDO currently allows for naturalized detention basins; however, there are few specific requirements and it does not provide enough information for users to understand/ deign these basins and areas. Additionally the standards outlined in the proposed Appendix H are designed to achieve requirements from MWRD's WMO.</p>

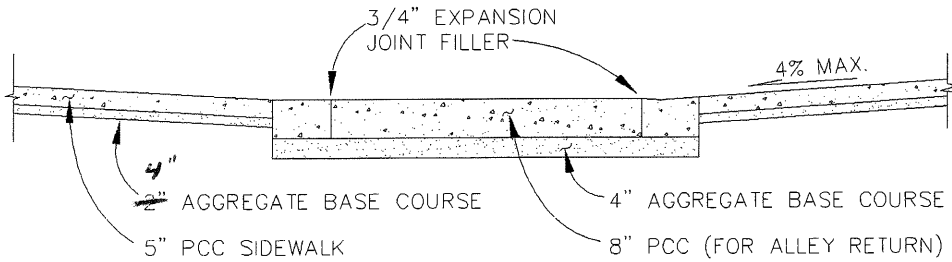
# Attachment 1



## TYPICAL DRIVEWAY APRON AND ALLEY RETURN



SECTION A-A



SECTION B-B

\* SEE STANDARD LS 6 RESIDENTIAL FOR DRIVEWAY PAVEMENT COMPOSITION

VILLAGE OF LEMONT		
DRIVEWAY APRONS AND ALLEY RETURNS		
12/10/01	NO. LS-5	REV. 2



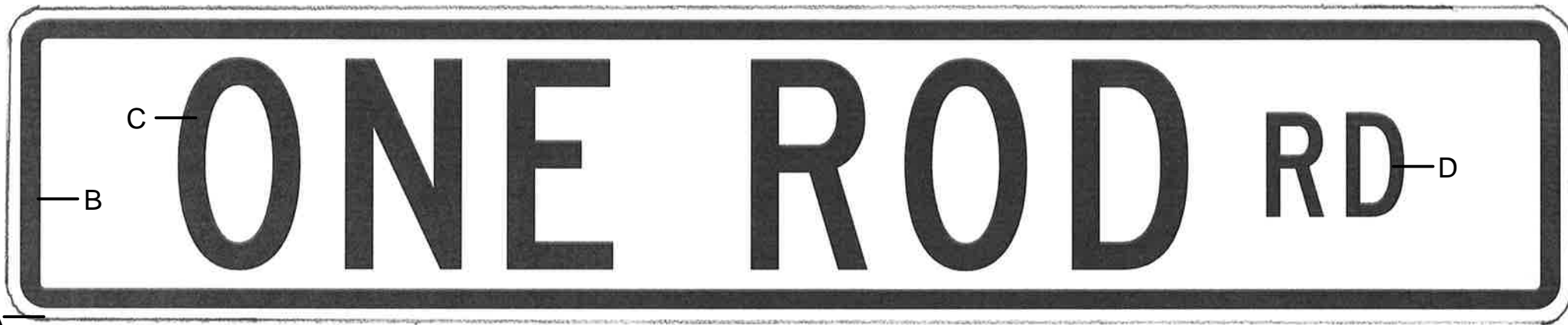
Sign size can be 6"x24", 6"x30", 6"x36" (size should be proportionate to street name)

Background material: High intensity grade prismatic reflective sheeting in white.

Letters and inside border are vinyl in black.

Sign blank is made of flat sheet aluminum .100 gauge.

All letters are in CAPS



A - Outside border = 1/4"

B - Inside border = 3/8"

C = Street name letters = 4"

D - Street type letters = 2"



## Native Planting Guideline

A resource for developers and residents who wish to incorporate native plantings into their property.

Village of Lemont

630-257-1550

To download a full copy of this guideline visit:

[www.lemont.il.us](http://www.lemont.il.us)

# Purpose of the NATIVE PLANTING Guideline

The Native Planting Guideline is a resource for developers and residents who wish to establish native plantings on their properties. The document has been developed by the Village of Lemont in consultation with professional ecological restoration practitioners using insight and practical knowledge regarding the design, implementation, and management of native plant communities and their associated ecosystems. It is intended to provide:

**Education of Developers & Residents** – Native plantings are not traditional landscapes — their design, installation, and maintenance follow scientific processes and can be complicated — they require understanding and patience. This document will inform individuals on why native plantings are important, set realistic expectations during their development, and present best practices for designing, installing, and maintaining them. It will also outline and discuss monitoring efforts that are critical to the successful establishment of native plantings.

**Efficiency in Review** - By providing these guidelines, the Village of Lemont is setting a minimum standard for the design, installation, and management of natural areas and native plantings whenever used throughout the Village. This will lead to a more consistent plan review process for developers and sets basic expectations for native plantings consistent with the intent of the current landscape ordinance. The goal is to set realistic expectations, reduce plan review costs, and improve the environment in an aesthetically positive way.

**Higher Quality Natural Areas** – Native planting areas that are constructed with a knowledgeable and comprehensive plan for installation and management are much more valuable to the owners and to the community. This guideline provides developers and residents proven methodology regarding the establishment and ongoing management of high quality native plantings that provide long-term functionality with positive aesthetics.

**More Natural Areas** - All Village residents benefit when degraded natural areas are restored to good health and when underutilized open space is converted to native plants. The Village encourages developers and residents to implement native plantings wherever possible. The Native Planting Guideline provides a knowledge base that will help get projects off the ground.

## Why Use Native Plants?

Plants are one of the only organisms on earth that can convert the sun's energy into a form of energy the rest of the planet can use and are the basis of most life on Earth. However, many of our native insects cannot eat plants that have been introduced from Asia or Europe and therefore rely on our native plants in order to survive. The remaining food chain relies on this interaction. Native plants form the foundation of our Midwestern ecosystem. They are uniquely American!

- N**OT LANDSCAPING  
There is an entire industry focused on the design installation and maintenance of native plantings. Make sure you hire qualified help.
- A**ESTHETICS MATTER  
When designed, installed, and maintained correctly, native plantings look good and add significant value to our community.
- T**IMING IS EVERYTHING  
Native plantings can take three to five years to fully establish and begin flowering. Patience and diligence is required. It's worth the wait!
- I**T'S NOT MAINTENANCE FREE  
Often native plantings are wrongly touted as "maintenance free." Once established they are low maintenance but do require care in perpetuity.
- V**ALUE NATURE  
Take time to learn about the many benefits native plants provide to our environment. Once they become valued, acceptance often follows.
- E**DUCATE YOUR NEIGHBORS  
Don't let your knowledge about native plants end here. Continue to learn and talk with your neighbors to help them understand their value.
- S**HARE YOUR STORY  
Too often we hear about the "weed patches" instead of the good plantings. When you've attained success by following these guidelines, share your story!



## CONTENTS:

### **SECTION 1**

Natural Areas Applications

### **SECTION 2**

Design Criteria

### **SECTION 3**

Construction & Planting Guidelines

### **SECTION 4**

Maintenance Guidelines

### **SECTION 5**

Performance Criteria & Monitoring

## **APPENDICES**

- A: Native Seed and Plant Mixes
- B: Contact Information for  
Local Professional Natural Areas Contractors
- C: Contact Information for  
Regional Native Plant & Seed Suppliers
- D: Invasive Species List
- E: Maintenance Schedules
- F: Submittal Checklist
- G: Examples of Installations
- H: References & Additional  
Information

### Using the Guideline and Enforcement

This document is to be used as a supplement to the established codes and ordinances of the Village of Lemont. The Village encourages the use of native plantings by residents and developers. Whenever native planting projects subject to Village codes and ordinances are implemented this document shall be utilized as the minimum acceptable standard. Native plantings not conforming to this guideline may be subject to the same enforcement tools as outlined in the Village's Landscape Ordinance.



SECTION

# 1

## APPLICATIONS FOR NATIVE PLANTINGS

Native plantings provide numerous benefits for your property, your neighborhood and the larger community. This section will outline which applications are best suited for the incorporation of native plantings and how they can deliver ideal solutions to common development challenges.

## 1.01 Stormwater Management

Historically, when rain fell on the virgin prairies and forested land in Illinois the water soaked into the soft rich soils (referred to as “pervious” surfaces) and emerged slowly into wetlands, creeks, and rivers as cool, clean groundwater. As humans began to alter the landscape through the construction of buildings, roads, and compacted lawns (referred to as “impervious” surfaces), larger and larger amounts of rain water would be diverted directly into water bodies at increasingly rapid rates resulting in regularly occurring localized and downstream flooding (Figure 1-2). In response to human-induced flooding, engineers began to address it by implementing stormwater management techniques into new development. These techniques centered on the temporary impoundment of rainwater in a basin or pond and using an appropriately-sized pipe to release the water downstream at a much slower rate than it would have moved off site without the basin in place. See Figures 1-3 and 1-4 for a diagram of the two types of basins and how they work. This approach to stormwater management has proven effective in reducing the frequency and severity of flood events, however in recent years the focus has shifted to improving the quality of the water moving off site in addition to controlling the quantity of water.

**It is important for residents and developers to understand that the overwhelming majority of “ponds” within the Village of Lemont are actually “retention basins” and are part of a stormwater management system.**

A tool used by engineers to predict and document the volume of water and the duration of its presence is a storm hydrograph. Hydrographs communicate the normal water level and the peak levels during particular storm events. See Appendix G for further explanation of hydrographs.

These water quality techniques are referred to as “Best Management Practices” (BMPs) and can be defined as environmentally-positive and effective stormwater treatment techniques to promote water infiltration into the soil and improve overall water quality. To achieve this, these systems rely on specialized soils, plants, and/or natural processes (naturally occurring bacteria and fungi in productive soils) to provide erosion control and reduce sedimentation, to remove nutrients from the water, and to create pervious surfaces that soak more water into the ground rather than allowing it to flow off the site. Most BMPs are designed to capture, filter, and treat the low intensity, high frequency rain events and/or the “first flush,” which is typically the first ½” of any rain event and

carries a majority of the pollutants washed away from roads and lawns.

The integration of native plants into BMPs dramatically improves their effectiveness. Roots of native plants reach deep into soil (sometimes upwards of fifteen feet, see Figure 1-1) and each year approximately 25% of their root system dies off and becomes organic matter. When the roots decay they leave porous holes or tunnels which aerate the soil, provide steady soil drainage, and increase the soil’s ability to absorb and hold water. The main result is that more stormwater is cleaned by natural processes and percolates through the soil. When compared to native plants, turf grass provides a fraction of the root mass (4-6” deep) and will not provide the multiple benefits afforded by native plants.

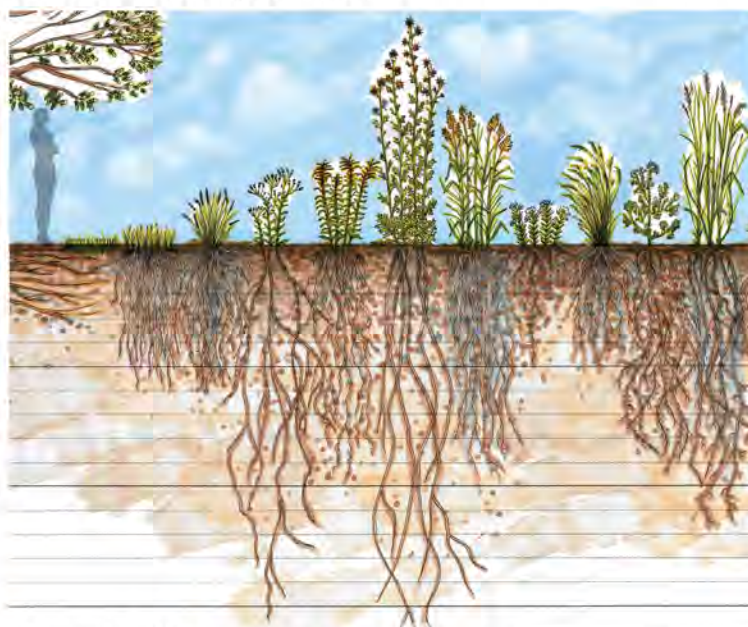


Figure 1-1: Native plant root drawing

Following is a description of some common BMPs for water quality improvement and how native plantings improve their function:

### 1.01.01 Naturalized Stormwater Basins

A. **Erosion Control** - Since their inception in the 1970s, stormwater basins have typically been planted with turf grass. It was quickly realized that turf grass was not suited to grow in wet soil conditions and the shallow root systems could not adequately withstand the erosive forces of water and ice which commonly give way to significant soil erosion (Figure 1-5). The traditional response to shoreline erosion is to install stone along the water’s edge. This is both an expensive and temporary application as stone requires its own level of maintenance, repairs, and replacement over time (Figure 1-6). Alternatively, installing the appropriate

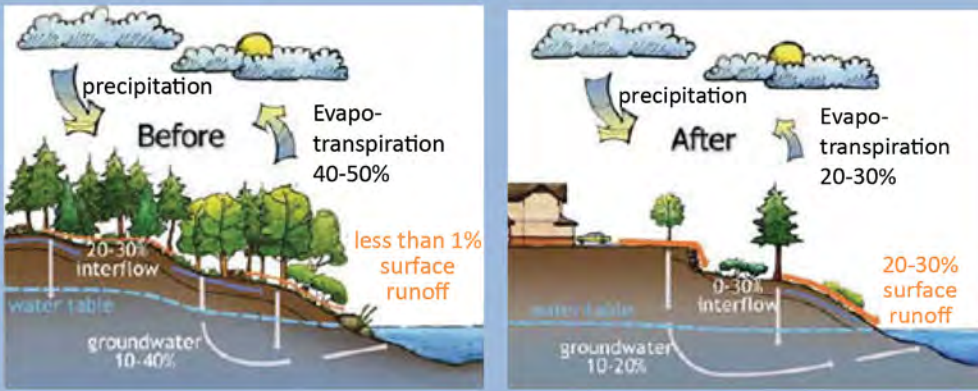


Figure 1-2: Before development almost all rainfall is taken up by plants, evaporates or infiltrates through the ground. After conventional development, surface runoff increases significantly while evaporation and infiltration into the ground decrease. Images courtesy of Puget Sound Partnership.

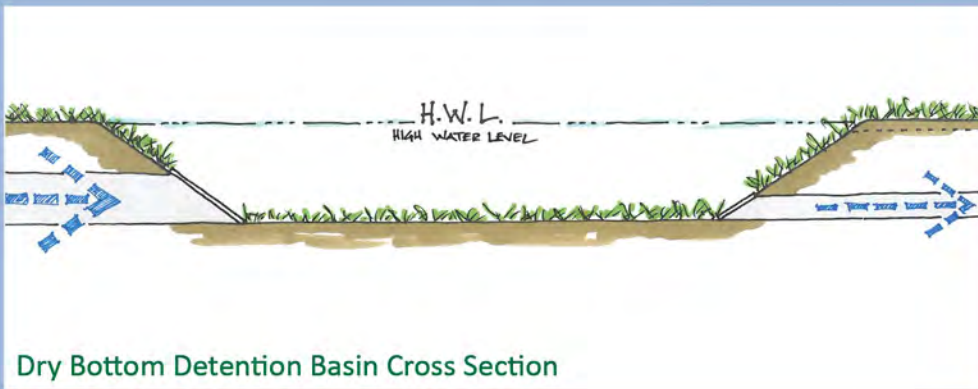


Figure 1-3: Dry bottom detention basins only occasionally hold water for a set period of time. Understanding the frequency and duration of water present will help develop your plant pallet.

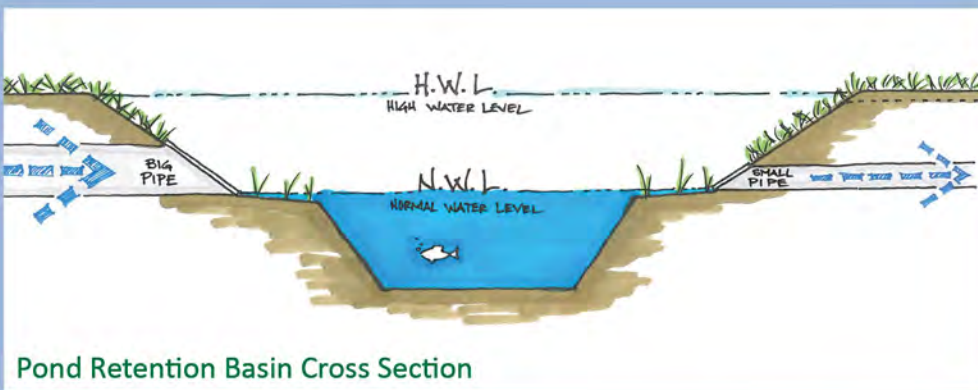


Figure 1-4: A pond retention basin always has water present but is designed to hold more water during a storm event. Native plants aid in bank stabilization and keeping the water clear.



Figure 1-5: Erosion along basin edge



Figure 1-6: Costly and unsightly rip rap stone along basin edge



native plants that evolved in a wet soil condition and have extensive, deep root systems locks shoreline soils in place. They also provide high quality habitat that will support healthy populations of dragonflies, frogs, and fish, which in turn attract Blue Herons, Great Egrets, and other beautiful birds.

1. In some cases stone may be required to prevent erosion and can be combined with native plants in an aesthetic manner. Examples of situations that may require the use of stone include where overland flows are highly concentrated or on north/northeast shorelines of very large ponds where significant wave action is generated by prevailing winds
- B. **Goose Control** - Ponds with mown lawn also invite large populations of Canada Geese who love easy access to water and feel secure being able to see potential predators for long distances. Geese can be aggressive toward humans, increase erosion by eating turf grass down to the roots, and leave large amounts of fecal matter all over walkways and in the pond. High levels of fecal matter in the water can also cause significant human health concerns. By incorporating native plantings that are three or four feet in height around their ponds, property owners can deter large populations of geese from their property (Figure 1-7).
- C. **Algae Control** - Lawn and rock-lined ponds often display unsightly algae blooms during the summer months. Algae growth is regulated by nutrient availability in the water (especially phosphorus) and water temperature. Fertilizers used on the lawn surrounding a stormwater basin ultimately end up in the pond. Fertilizers applied to a resident's lawn wash into the street, then into the storm sewer, and ultimately end up in the pond. Warm water washing from hot roads and rooftops enter the pond during rain events. Shallow water areas of a pond, such as the "safety shelf" (Figure 2-3) warm quickly in the summer sun. Algae uses nutrients from the fertilizer and the warmed water to reproduce at aggressive rates. By utilizing native plants around a pond many of the nutrients from fertilizers get used up by the plantings and as they grow in the shallow water areas they shade the water and reduce temperatures, reducing or eliminating algae growth. Algae growth can be reduced further if stormwater, specifically that water coming from highly fertilized residential lawns, is filtered through an additional BMP prior to entering the main pond. The use of several BMPs together to maximize filtration, infiltration, and overall water quality is typically referred to as a "Treatment Train."
1. The installation of fountains in a pond is sometimes suggested as a solution for algae growth. While fountains

can help improve the overall health of the pond and aid in the decomposition of dead plant material in the pond (dead algae, dead plants, leaves, etc.), they often do little to prevent algae blooms from forming (Figure 1-8) because algae growth is tied to nutrient loads and water temperature. Fountains typically require a significant monetary investment upfront and will incur ongoing maintenance and operational costs. If you have an algae problem in your pond, make sure to understand the root cause and formulate an effective solution before investing limited resources.

#### 1.01.02 Bioswales

Bioswales are a type of BMP characterized by a depressed area located along side or within an area of pavement (such as a parking lot) that are designed to collect and convey stormwater from one point to another while filtering and increasing percolation of water into the ground. They may use native or engineered soils and native plants. Depending upon the design requirements of the engineer, they may also include an underdrain installed below the soil complex to ensure that the system does not retain water for long periods of time (Figure 1-17)

#### 1.01.03 Rain Gardens and Bioinfiltration Basins

BMPs characterized by shallow to deep depressed areas and are designed solely to infiltrate and percolate water into the ground (no conveyance) are typically referred to as rain gardens (typically small) or bioinfiltration basins (typically large). These systems use either native or engineered soils and native plants to treat and infiltrate the low intensity, high frequency rain events. Again, the design engineer may include an underdrain below the main soil complex to ensure that the system does not retain water for long periods of time.

#### 1.01.04 Other

There are many other BMPs that can be implemented that may or may not incorporate native plantings but are focused on capturing and treating small, frequent rain events to encourage infiltration. For example, rock check dams can be installed within swales or the bottom of dry-bottom detention basins designed to temporarily hold back or slow down small amounts of water so that sediments and nutrients can settle out of the water prior to being released downstream (Figure 1-9). The Village encourages all residents and developers to implement stormwater Best Management Practices wherever practical at their property.



Figure 1-7: Native plantings hinder geese



Figure 1-8: Algae persists with fountains



Figure 1-9: Rock check damn

## 1.02 Open Space

When most people hear the words “open space,” they may first think of national or state parks, forest preserves, or public parks. But consider that we each have a little bit of open space in our yards and most subdivisions have commonly controlled open space that is collectively “owned” and managed by the residents of that development, which usually includes stormwater facilities. These are all areas in which the Village encourages the incorporation of native plantings or the restoration of degraded natural areas that may already exist. Naturalizing our open spaces provides needed habitat for birds and butterflies, rebuilds soil, and encourages water percolation that can help relieve flooding, reduces the need for costly and dangerous fertilizers, eliminates the use of precious clean water for irrigation, reduces maintenance costs, and preserves our connection with the natural world. Following is a description of the main types of natural areas found in the Lemont area, these systems can be modeled when establishing native plants in an open space.

### 1.02.01 Woodlands

Populated with trees, woodlands can be sparse or they can be very dense. Historically, most of the land that comprises the Village of Lemont would have been woodland dominated by moderately spaced oak species with little brush understory (Figure 1-10 – Plat Map). In addition to trees overhead, the ground would have been lush with sedges, grasses, and wildflowers. Unfortunately many of our remaining woodlands have become crowded with lower quality secondary growth species and infestations of invasive species, such as honeysuckle and buckthorn. The amount of shade produced by the additional trees and non-native brush prevents healthy oak regeneration and suppresses, or even eliminates, the once lush forest floor. By removing invasive brush, thinning low-quality trees, installing native species, and beginning an ongoing management strategy the community can once again breathe life back into our wooded open spaces.

High quality woodlands not only harbor rare native flora and fauna, they also provide unique recreational opportunities for people. With the help of signage and trails, a woodland that may be underused by the community can become an educational and relaxing attraction for residents and visitors, contributing to overall quality of life (Figure 1-11).

### 1.02.02 Prairies

French for “meadow,” a prairie is a relatively flat, highly diverse, open grassland devoid of trees (Figure 1-13). Mostly

comprised of grasses, sedges, and wildflowers, prairies were common throughout the Midwest but were not historically a dominant land cover throughout the Village of Lemont (Figure 1-10 – Plat Map). Prairies are a unique ecosystem where they do occur, with plants that have evolved over time to become resilient to a wide range of temperature fluctuations and rainfall variations. Their deep roots allow the plants to endure fires that would regularly sweep the plains, drought conditions that periodically occur in the Midwest, and harsh winters. These deep root systems are directly responsible for the development of the rich, highly organic soils that are so productive in Illinois. Because of their soil productivity, less than one-half of one percent of the original prairies in Illinois escaped conversion to crop land. By converting underused lawn to prairie and using prairie plants in our stormwater facilities, the community can replicate the highly productive systems of the past within our open spaces.

It takes about three years of growth for a newly planted prairie landscape to become established. Prairie landscapes create beautiful vistas, attract butterflies and birds, don't require irrigation, and are typically much less costly to maintain than traditional turf grass. Ongoing management of prairies are required in perpetuity in order to keep the system healthy with a pleasant aesthetic.

### 1.02.03 Wetlands

Wetlands are some of the most beneficial ecosystems in the world and have been proven to increase water quality, provide habitat for a large number of plant and animal species, and reduce flooding or the damage caused by flooding. They are areas where water covers the soil or is present just beneath the soil. They occur in both wooded and open areas (Figure 1-14). Long periods of inundation create specialized habitats in which certain plants and animals evolved and adapted to wet soil and standing water conditions. Historically, within the Village of Lemont wetlands would have been common along the Des Plaines River and occasionally found elsewhere (Figure 1-10 – Plat Map).

Many of our wetland areas today have been overrun with invasive species that originated in Asia or Europe, such as Reed Canary Grass or Common Reed (Figure 1-15). By restoring or creating natural wetlands using native plants we can create much needed specialized habitat, decrease flood damage and improve water quality before it enters our rivers and streams.

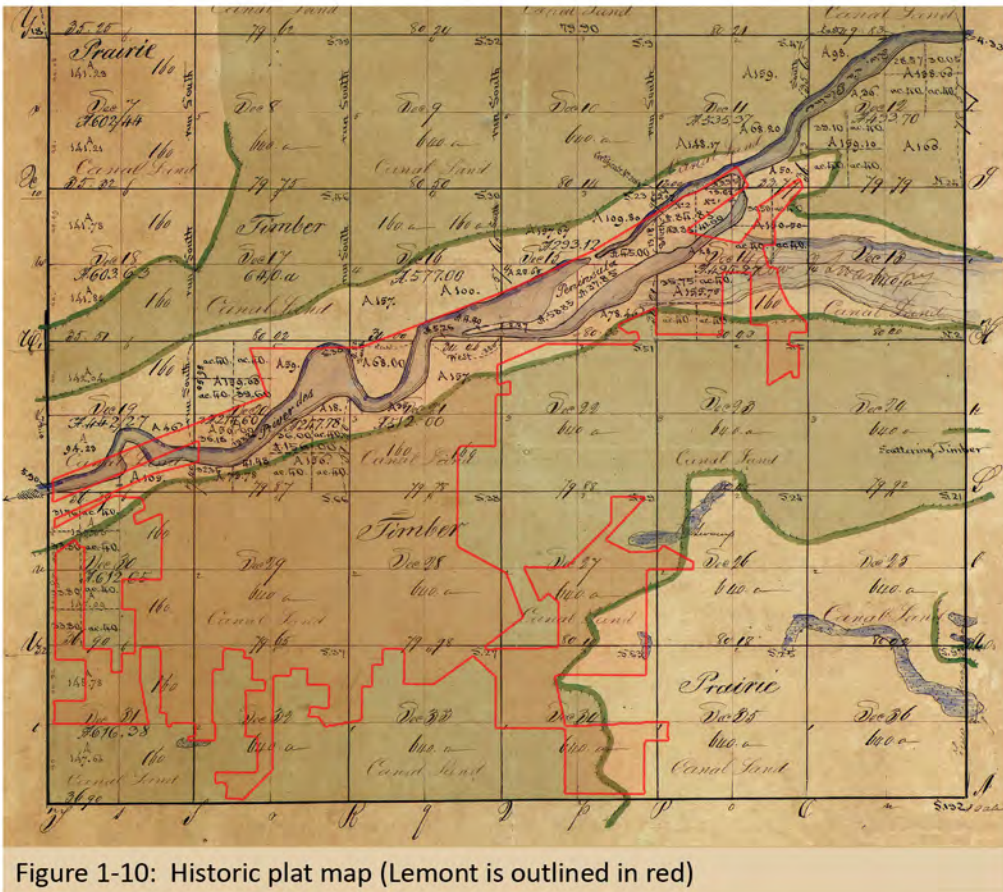


Figure 1-10: Historic plat map (Lemont is outlined in red)

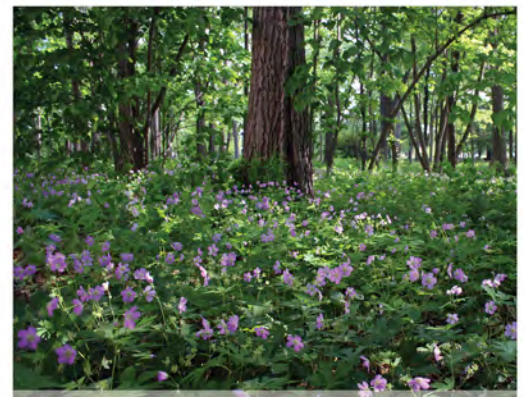


Figure 1-11: Native Woodland



Figure 1-12: Path Through a Native Woodland



Figure 1-13: Restored Native Prairie



Figure 1-14: Restored Native Wetland



Figure 1-15: Invasive Reed Canary Grass



### 1.03 Native Landscapes

Native plants are not only found in natural areas; they are commonly used within designed landscapes around corporate buildings, in a public parks, and in residential landscapes. Through their evolution in the Midwest, they have the genetic makeup to withstand our climate, without the use of pesticides and fertilizers and with little to no irrigation. If low maintenance is what you desire, native plants are the way to go.

Whether you have several acres of open space or a smaller residential lot within the Village, incorporating native plants is not a difficult task. You may be surprised to learn that many native species are available at your local garden center (Figure 1-16). If you're a hobby gardener it's likely that you have at least one species of native plant in your garden already! If you are looking to add native plants to your garden, it may be as simple as choosing a black-eyed Susan at the garden center instead of a daylily to spruce up an existing flower bed. Native plants can either be incorporated into a bed of existing flowers or can stand alone as a native garden. They create seasonal interest including flowers, fruits, fall color, and winter structure, while providing habitat and food for butterflies, bees, birds, and more.

If your project has a problematic wet spot, add native plants such as swamp milkweed or southern blue flag iris to create a rain garden that will look great and thrive in the soggy conditions. If deer have developed a liking for nibbling on your landscape plants, consider using native species such as purple coneflower and side oats grama — both resist deer browsing.

**Many common challenges or constraints that sites face can be resolved through the use of native plants.**

#### 1.03.01 Buffalo Grass

Native plants can even be used to replace turf. Buffalo grass (Figure 1-17), a low-growing plant native to the Midwest, requires much less water than traditional Kentucky blue grass. Buffalo grass will stay six to eight inches at its mature height and can be mown once a month if a more manicured look is desired. It is a warm season grass that will require no irrigation, reduced amounts of fertilizer, and less mowing. Buffalo grass also has roots that reach up to 15 feet deep and will help with erosion and water percolation. Following are a few tips to ensure your Buffalo Grass lawn establishes and flourishes:

A. Use a cold-hardy cultivar of buffalo grass, such as

'Bowie'

- B. Buffalo grass will perform best in a location that receives 6 hours of sunlight throughout the day and has moderately dry to very dry soil conditions.
- C. Many suppliers of buffalo grass sell it for pasture planting and recommend a very low seeding rate. If establishing a lawn, use 100-150 lbs of seed per acre being seeded.
- D. Buffalo grass is a warm season grass, which means it likes soil temperatures of at least 60-70 degrees and should be planted between June – August. In Lemont, it is not recommended to seed Buffalo Grass later than August. This is completely opposite of traditional Bluegrass or Fescue, both of which are cool season grasses typically planted in early spring or late fall.
- E. Prepare the soil just as you would for a traditional lawn seeding, including a light application of gypsum and starter fertilizer.
- F. For best results, cover the seeded area with a single-net straw erosion control blanket.
- G. Apply water to the seeded area once in the morning and once in the evening for a 3-4 week period.



*Asclepias tuberosa*  
Butterfly Weed



*Aster novae-angliae* 'Purple Dome'  
New England Aster



*Echinacea purpurea* 'Magnus'  
Purple Coneflower



*Liatris spicata* 'Kobold'  
Marsh Blazing Star



*Monarda fistulosa*  
Bee Balm



*Panicum virgatum*  
Switchgrass



*Penstemon digitalis*  
Foxglove Beardtongue



*Rudbeckia fulgida*  
Showy Black-Eyed Susan



*Schizachyrium scoparium*  
Little Bluestem



*Sporobolus heterolepis*  
Prairie Dropseed

Figure 1-16: Common Native Plants for Landscape Applications



Figure 1-17: Native Buffalo Grass Lawn





SECTION

# 2

## DESIGN CRITERIA

Successful establishment of native plantings requires regulatory compliance, ensuring that the right species are specified for the right location, utilization of quality products, and hiring experienced contractors. In effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the baseline design criteria that should be followed when planning a native planting project.



### 2.01 General Requirements

The Village must review and approve all proposed native planting plans for new development within the Village. For plan review purposes, a submittal checklist has been developed to summarize plan requirements for native planting plans, refer to Appendix E.

#### 2.01.01 Requirements by the Ordinance

Required design criteria are described in the Village of Lemont Unified Development Ordinance. This document outlines the strategies in which to conform to those requirements using native plant species.

Please refer to these documents for specific requirements:

#### Lemont Unified Development Ordinance

- A. Chapter 17.20 Landscaping and Tree Preservation, Section 17.20.080 Landscape Standards for Detention Ponds
- B. Chapter 17.24 Soil Erosion and Sedimentation Control
- C. Chapter 17.29 Storm Water Management, Section 17.29.020 Design Standards

In addition to the Lemont Unified Development Ordinance, developments must also conform to all Federal, State, and County requirements. County stormwater regulations must be followed for all new development:

- D. Developments within Cook County: The Metropolitan Water Reclamation District of Greater Chicago (MWRDGC)
- E. Developments within DuPage County: DuPage County Department of Environmental Concerns (DEC)
- F. Developments within Will County: Will County Land Use Department (LUD)

#### 2.01.02 Sources of Supply – Native Seed & Plants

- A. Seed shall be purchased from sources specializing in native species. When available and economical, native seed and plant stock shall originate from sources within the same EPA Level III Ecoregion as the project site (Figure 2-1). If the specified species are not available from the same Ecoregion or are not economical to obtain, seed shall be obtained from an adjacent Ecoregion, preferably to the west or east, but no further than 350 miles from the project site unless otherwise approved by the VILLAGE.
- B. Seed supplier's facility shall have the capacity to maintain optimal conditions for seed viability and freshness, including but not limited to the ability to control temperature and humidity in each work area, from receiving through seed cleaning, processing, stock shelves and long-term storage.
- C. Seed not grown by the vendor must be clearly indicated

and accompanied by the name and address of the company which grew the seed.

- D. Proposed nursery(s) shall be approved by the VILLAGE **prior to commencing work.**

#### 2.01.03 Native Seed Quality

It is of critical importance to procure high-quality native seed for your project. Native seed is not the same as turf grass seed, which has been genetically modified and perfected for enhanced germination. Native seed is grown naturally, collected in many cases by hand, and processed according to species. If this process is done incorrectly or if the seed is not stored appropriately, it can quickly go from good viable seed to dead seed that may never germinate. Using the following minimum standards for seed quality will eliminate one of the many pitfalls to successful establishment of native plantings. Keep in mind that there is typically a difference in price between good viable native seed and bad native seed. However, even though quality seed may cost a bit more in the beginning, the investment typically saves money over the life of the project by reducing or eliminating the need to re-seed and by establishing more quickly providing competition for weeds (Figures 2-2 and 2-3).

- A. Standards:
  1. All seeds shall comply with the Federal Seed Act.
  2. All seeds shall be of straight species. No horticultural varieties shall be acceptable.
- B. Natural Areas Contractor shall provide a fresh clean crop of the specified seed species. All native seed supplied shall be from seed lots tested by a qualified seed testing laboratory. Certificates for each lot of each species tested must be supplied to the Owner/Owner's Representative directly from the testing laboratory. Seed test results shall be dated no more than 12 months prior to the anticipated seed installation date.
- C. "Bearded" forb species seed (*Symphytotrichum*, *Solidago*, *Liatris*, etc.) shall be provided as defluffed/debearded seed. Legumes (*Dalea*, *Lespedeza*, *Desmodium*, etc.) shall be provided as de-hulled seed.
- D. All native seed shall be provided on a pure live seed (PLS) basis. Actual seed amounts used on the project will vary with the actual percent of PLS in the seed lot. Seed supplied to the site shall contain documentation of PLS testing and, if required, adjustment of the seed weights to provide 100% PLS standards. If rounding is required during PLS adjustment calculations, the adjustment shall always be rounded up. PLS adjustment must be based on seed test results dated no more than 12 months prior to the anticipated seed installation date. Minimum PLS percentage for any species shall be 70%.

### Level III Ecoregions of the Continental United States

(Revised April 2013)  
National Health and Environmental Effects Research Laboratory  
U.S. Environmental Protection Agency

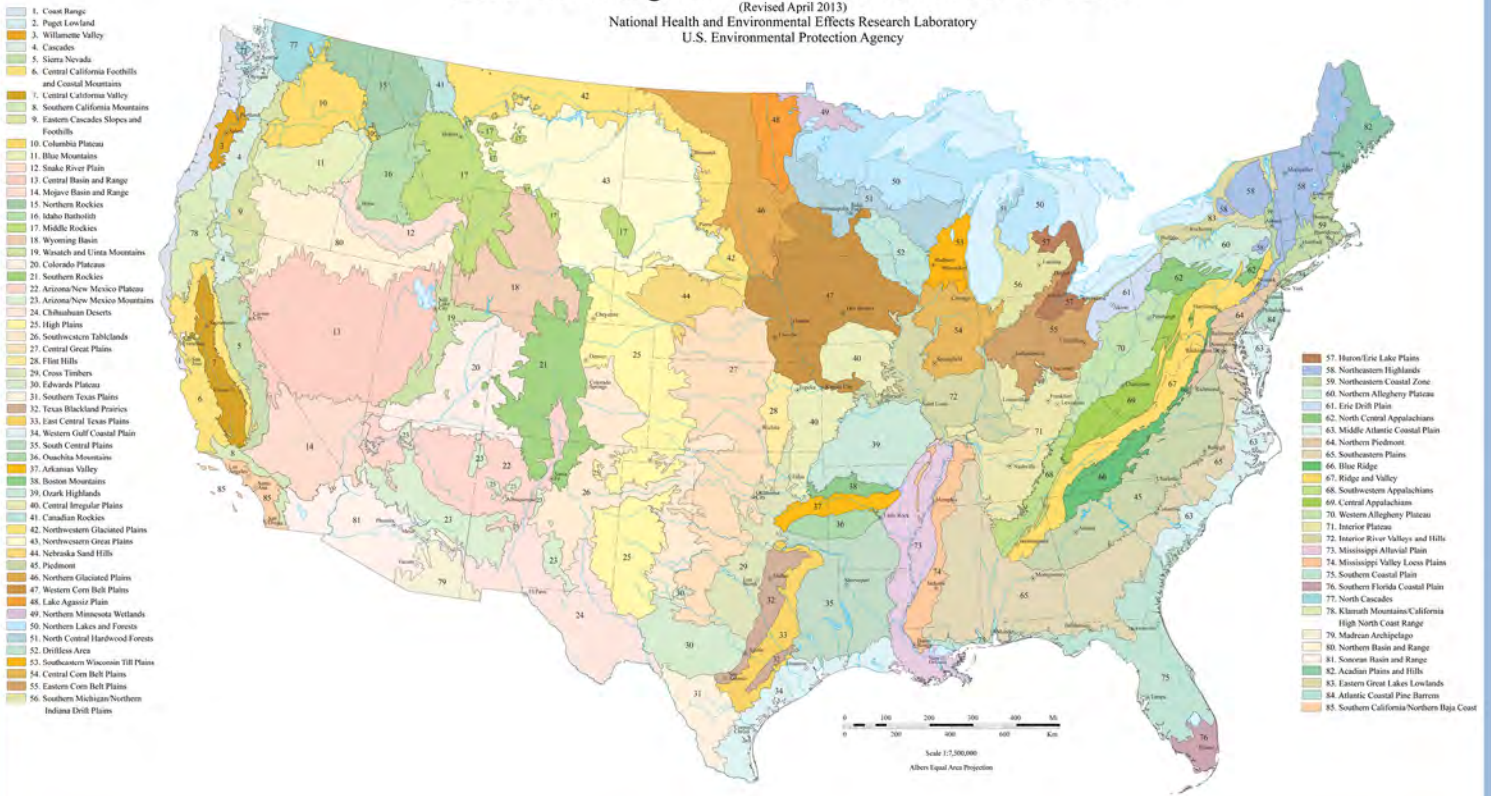


Figure 2-1: Map of the Ecoregions of the United States - This map illustrates the division of ecosystems that contain specific species, natural communities, and climate. Part of Illinois is in region 251, while the Cook, DuPage, and Will counties are within the 222 region.



Figure 2-2: Low Quality Native Seeding



Figure 2-3: High Quality Native Seeding

Figures 2-2 & 2-3: There is a vast difference in seed quality and rates between installation companies. It is recommended to specify the minimum standards in this section to ensure a successful installation with appropriate seeding rates and quality criteria.





Figure 2-4: Native Seed to be Mixed On Site



Figure 2-5: Sealed Native Seed Bags



Figure 2-6: Necessary Seed Label Information

- E. Seed containing noxious weeds will not be accepted. Seed containing weed seed in excess of 0.5% will not be accepted. Seed collected from the wild will not be accepted. It is a violation of the law to disturb, injure, or collect any plant on a national wildlife refuge or state nature preserve without a permit.
- F. When required, seed shall be appropriately stratified prior to installation, specifically species requiring scarification. If the project has been designed for a dormant seed installation using a “stratification seed mix” and the Natural Areas Contractor misses the optimal installation timeframe, they shall artificially stratify any seed species identified as requiring stratification prior to installation at no additional cost to the Owner.
- G. **All seed shall be shipped in single species containers directly from the supplier and shall be mixed at the time of planting by the Natural Areas Contractor (Figure 2-4). At no time shall seed species be mixed by the supplier unless approved in writing by the Owner/Owner’s Representative.**
- H. All seed shall be furnished in sealed containers (Figure 2-5). Seed that has become wet (unless as properly intended as a result of stratification), moldy, or otherwise damaged in transit or storage will not be acceptable.
- I. Seed packaging shall be legibly tagged as to supplier name and address, project name, seed mix name, species scientific name, species common name, lot number, specified quantity (adjusted for acreage), and PLS adjusted quantity (adjusted for acreage), refer to Figure 2-6. Seed stock shall be true to species as specified in this document or as approved in writing by the Owner/Owner’s Representative.
- J. All native seed mixes will be accompanied by a cover crop consisting of *Avena sativa* (seed oats) at a rate of forty (40) pounds per acre with spring planting or ReGreen™ (wheat x wheatgrass hybrid) cover crop at a rate of fifty (50) pounds per acre for fall plantings. **The cover crop shall be the only non-native species planted!** The Owner/Owner’s Representative may approve the deletion of the cover crop as a result of site conditions.
- K. All native seed mixes will be accompanied by a granular form of endomycorrhizal inoculum at a minimum rate of forty (40) pounds per acre and rhizobia inoculum for the appropriate plant species at rates recommended by the native plant nursery. Natural Areas Contractor shall provide proof that the mycorrhizal inoculum utilized contains a majority of live spores.

2.01.04 Native Plant Quality

A. Standards:

- 1. All plant materials, methods, etc. are to conform to the Standards of the American Association for Nursery Stock (ANSI Z60.1-2004). In the event there is a discrepancy between ANSI standards and this document, the most restrictive requirement shall govern. Following are acceptable standards for native herbaceous perennials in the sizes as specified:
  - a. **2” Potted Material** – provided in single-form factor plug trays that are configured to grow plugs at least 2” in diameter/square by 4-1/2” deep (minimum 11.3 in<sup>3</sup> dry soil volume), unless otherwise noted in this document or as approved in writing by the Owner/Owner’s Representative (Figure 2-7).
  - b. **1 Quart Material** – provided in thermo- or vacuum-formed pots that are at least 4” diameter/square by 4-3/4” deep (minimum 57.8 in<sup>3</sup> dry soil volume), unless otherwise note in this document or as approved in writing by the Owner/Owner’s Representative.

- c. **#1 Container Material** – provided in thermo- or vacuum-formed pots that are at least 5-1/2" in diameter/square by 5-1/2" deep (minimum 115.5 in<sup>3</sup> dry soil volume), unless otherwise noted in this document or as approved in writing by the Owner/Owner's Representative.
- 2. All plants shall be of straight species. No horticultural varieties shall be acceptable unless otherwise approved by the Village.
- B. Live plant containers shall be legibly tagged as to name and size of container and shall be true to species as specified in this document.
- C. All live plants shall be alive, healthy, hydrated, and in a vigorous growing condition at the time of delivery.
- D. All live plants will be inoculated with a broad-spectrum mycorrhizal fungi mix. All leguminous species must be inoculated with the proper strain of rhizobia inoculum.
- E. For ephemeral, emergent, submergent or other specific types of native species, bare root stock may be utilized upon written approval by the VILLAGE.
- F. Contractor shall provide written documentation to the Owner/Owner's Representative as to the source of supply, quantities, and species by scientific and common name of the live plants ordered prior to installation (e.g. supplier's invoice).

#### 2.01.05 Contractor Qualifications

Finding the right Natural Areas Contractor for your native planting project is another critical step in ensuring successful establishment. There is an entire industry focused on installing and maintaining native plantings. It is significantly different than traditional landscaping. The Village encourages developers to talk with several different contractors who specialize in natural areas work, check references, and take the time to go out and visit their projects. Make sure they do a quality job that meets your expectations; ultimately it is in your best interest that these native planting areas add value to your development, not detract from it. Quality contractors may cost a bit more but will typically stand behind their work and won't charge you for continued failures. They also tend to achieve final acceptance much more quickly than an inexperienced contractor, which should save money over the life of a project. To help you get started in the search for a qualified Natural Areas Contractor, the VILLAGE has provided some minimum criteria below.

- A. All work shall be performed by a Natural Areas Contractor with extensive documented experience in selective brush and tree clearing for the purposes of ecological restoration, native seeding, planting, and natural areas management, and shall be able to demonstrate their knowledge in the field.
  - 1. Because it can take 3-5 years before a natural area matures and can be determined a success or a failure, the VILLAGE highly recommends the use of Natural Areas Contractors having a minimum 5 years of experience and prefers at least 7 years of experience.
- B. Natural areas brush and tree clearing shall be conducted or supervised by an International Society of Arboriculture (ISA) Certified Arborist holding a current certification.
- C. Foreman, laborers, and other field staff shall be thoroughly familiar with natural areas restoration and shall have a working knowledge of the type and operation of equipment being used. All Natural Areas Contractor crewmembers shall be well versed in the identification of native and non-native woody and herbaceous species during both the dormant and growing seasons.
- D. If conducting prescribed fire, the Burn Boss shall have met the requirements



Figure 2-7: 2" Native Potted Plug with Label



Figure 2-8: Native Planting Contractor



of Illinois Law and Regulations (17 Illinois Admin. Code 1565.70) and shall be recognized as a Certified Prescribed Burn Manager in compliance with the Illinois Prescribed Burning Act (525 ILCS 37). All prescribed fire crewmembers shall have a minimum of one year documented experience conducting prescribed fire and successful completion of NWCG S130/S190 or equivalent.

- E. Refer to Appendix B for a list of local professional Natural Area Contractors in the area.

#### 2.01.06 Permits and Fees

- A. Natural Areas Contractor shall obtain any necessary permits for the required work and pay any fees required for permits.

## 2.02 Stormwater Management Design

In order to establish native species, stormwater management facilities and streambanks must be designed using specific techniques. If designed inappropriately it will be a challenge to establish native plants successfully and costs will increase. The VILLAGE requires hydrograph information be calculated by engineers and provided to landscape architects and native planting designers for each detention facility. Hydrographs shall be used to understand water volume and peak flows that are essential in developing species lists. See Appendix G for more information on hydrographs.

#### 2.02.01 Stormwater Detention Basins

Understanding the type of stormwater detention basin(s) that is in your development is critical to successful establishment of native plantings. There are two types of stormwater detention basins (See Section 1, Figures 1-3 and 1-4 for Cross Sections):

- A. Dry-Bottom Detention Basin (Figure 2-9) – Just as the name implies, these basins have a bottom that is dry except during rain events. They are designed to detain stormwater temporarily after a rain event, releasing it slowly downstream over an extended period, sometimes referred to as “draw down time.” Implementing native plantings within these basins decreases soil erosion, promotes water infiltration, and helps to filter pollutants out of the smaller, more frequent rain events.
  - 1. Basin Design Criteria –
    - a. Dry-bottom basins should be designed to have positive drainage to ensure that all the water drains from them following a rain event. Grading contractors cannot perfectly grade a completely flat bottom basin and it will always end up with un-planned low spots that stay wet and cannot support the plants specified for a dry-bottom condition. If a flat bottom is desired, plunge pools must be incorporated throughout the basin in order to ensure a designed low area for water to settle. These areas can then be planted with a different set of species suited for wetter environments.
    - b. Decompact the subbase soils and spread 12” of quality topsoil throughout the bottom of the basin to increase seed germination, increase water holding capacity and help promote infiltration.
- B. Wet-Bottom Detention Basin (Figure 2-10) – Wet-bottom basins are designed similarly to dry-bottom basins but retain small amounts of water after a rain event and incorporate wetland plantings within the bottom of the basin.
  - 1. Basin Design Criteria –
    - a. Design water depths of less than 24”, concentrate on water depths between 6-12”. Vegetation will be sparse in 18-24” water depths. Water depths of 24-48” will typically not support quality vegetation and will be subject to algae blooms.
    - b. Vary the water depths throughout the basin bottom, creating some areas that become exposed during drier time of the year. This creates better habitat and encourages populations of insects and other animals that feed on mosquitos.
    - c. When designing water depths greater than 18”, consider installing a water control structure so that the contractor has the ability to lower water levels for planting and maintenance purposes (Figure 2-11).
    - d. Over-compact the sub-base soils so that they will hold water, then spread 12” of quality topsoil throughout the bottom of the basin to increase plant establishment and water holding capacity.
- C. Retention (Pond) Basin – As the name implies, retention basins are designed to retain water permanently and are often referred to as a “pond” (Figure 2-12). These basins still provide a detention function, capturing and detaining stormwater during rainfall events above the normal water level. Because these basins hold water all year and are subject to ice sheer during the winter, shoreline erosion is a major concern with this type of basin. Implementing native plantings along the



Figure 2-9: Successful Naturalized Dry Bottom Detention Basin



Figure 2-10: Successful Naturalized Wet Bottom Detention Basin



Figure 2-12: Successful Naturalized Pond Retention Basin

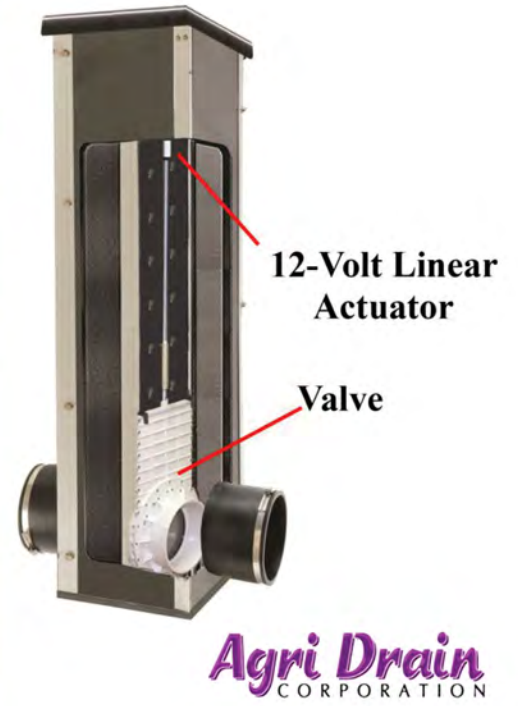


Figure 2-11: Water Control Structure

shoreline and up the slope decreases soil erosion, deters geese, filters pollutants and helps reduce algae blooms.

1. Basin Design Criteria –

- a. A standard design element of retention basins is a “safety shelf.” This is typically a three to ten foot wide shallow area directly adjacent to shore that protects people from drowning if they accidentally fall into the water. The bulk of these areas should be designed to have a water depth below 12” in order to support the maximum amount of plant material.
- b. Decompact the subbase soils along the safety shelf and spread 12” of quality topsoil throughout the shelf areas to increase wetland plant establishment rates.
- c. Beyond the safety shelf, basin grades should drop rather sharply to a final minimum depth of eight feet, which is the depth required for overwintering of fish. Plant material will struggle to establish in water levels deeper than 18”.. As the water level deepens, the water temperatures cool making it more difficult for algae to grow.
- d. Understand that your basin will likely receive some eroded soil that will settle in the bottom (referred to as “sediment”) during construction as well as long term organic material (leaves, dead algae, etc.). Sediment and muck development will reduce the overall depth of a pond over time, therefore the VILLAGE advises that the deepest basin bottom depths be designed a minimum of two feet below the desired final basin depth.
- e. When designing water depths greater than 18” consider installing a water control structure so that the contractor has the ability to lower water levels for planting and maintenance purposes (Figure 2-11).

D. Stormwater Basin Plant Selection Criteria –

1. On the bottom of a dry-bottom basin, specify plants that can withstand long periods of drought and shorter periods of inundation. Redundancy is important in these mixes: incorporate a combination of dry, mesic, and wet adapted native species.
2. On the bottom of a wet-bottom basin and within the safety shelf of retention basins, specify plants that can withstand continually wet soils and/or standing water conditions. In basins that produce hydrographs showing frequent, long periods of high inundations (one foot or more over a 72 hour period) it may be necessary to specify a portion of the plantings as floodplain species.
3. The area of slope between Normal Water Level (NWL) and High Water Level (HWL) is referred to as the “bounce zone.” During rain events water level fluctuates in this area, specify plants that can withstand long periods of drought and shorter periods of inundation. It is advisable to design species lists for between NWL and the 2-year storm, between the 2-year storm and the 10 or 25-year storm, and between the 10 or 25-year storm and the 100-year storm.
4. See Figure 2-13 for planting zone cross sections and Appendix A for the VILLAGE approved native seed and plant mixes.

### 3.02.02 Sedimentation Basin

There are numerous common elements that can be added to detention basins to provide improved results. The first is to add a sedimentation basin or forebay. Most of the sediments and pollutants entering a stormwater basin occur during construction and long term during the more frequent storm events. Using sedimentation basins to capture sediment before it gets to the main body of the basin will extend basin life, reduce algae, and divert expensive dredging activities from the larger basin and contain it within a designated portion of the basin. Sedimentation basins should capture and detain the volume of water associated with frequent storm events for a period of 18 to 24 hours. Using pre-treatment measures like this can delay the need for basin dredging by up to 40 years.

### 3.02.03 Water Quality BMPs

As summarized in Section 2, water quality Best Management Practices (BMPs) are alternative drainage techniques used in a stormwater management program that reduce runoff and improve water quality. The main goal of their implementation is to use landscaped areas to move (if necessary), store, and filter stormwater within the project site. The VILLAGE encourages residents and developers to incorporate the BMPs on their properties, minimum design criteria for the most common water quality BMPs are provided below.

- A. Bioswales – It is important to realize that there is no single, perfect design for bioswales. They can take many shapes and forms depending upon your site and the stormwater goals (See Figure 2-14). Bioswales can be designed to percolate and filter water through an engineered soil matrix or can be designed simply as water conveyance systems that rely on native plantings to filter the water as it passes through the system. They can be designed to remain wet or to dry out after each

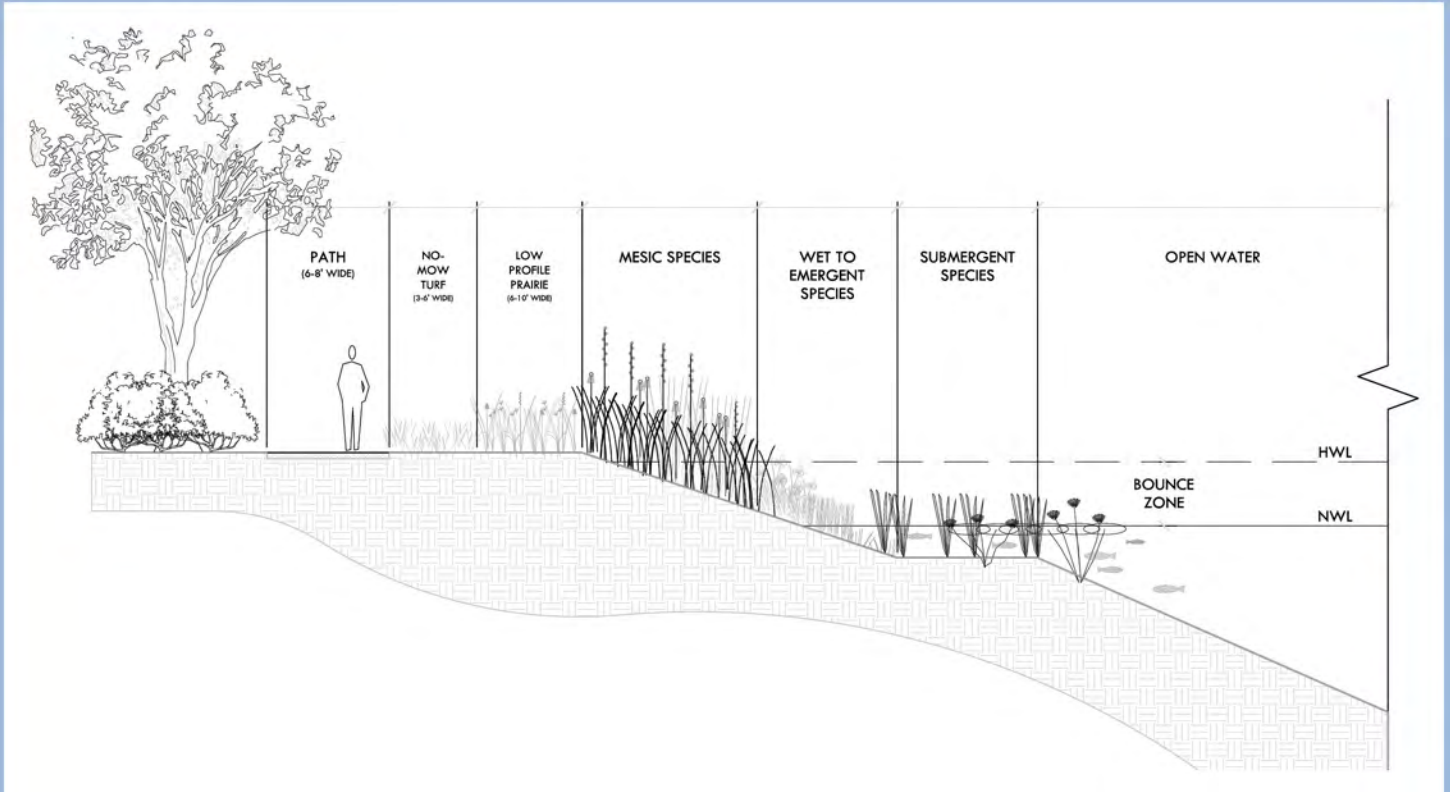


Figure 2-13: Example Planting Zone Cross Section



Figure 2-14: Bioswale in a Parking Lot using Native Plants





rain event.

1. General Design Criteria –

- a. Bioswales should be designed to hold a minimum of a 10-year storm, have minimum 3:1 side slopes, must have positive drainage of no less than 0.5%, and must have a designated emergency overflow pathway. Designs outside of these parameters must be approved by the VILLAGE.
- b. If the goal of the swale is to infiltrate water, the swale should have a percolation rate into native soils of greater than one-half inch per hour. Test your native soil's ability to percolate water; if it has adequate percolation take great care not to compact the soils during construction. If the native soils do not have adequate percolation rates or become compacted, water infiltration will not be possible and the focus should be on water filtration rather than infiltration.
- c. For filtration bioswale systems, design a sand-based engineered soil in the swale bottom and install perforated drain tile pipes several feet below the surface.
- d. Install a water bypass valve so that the contractor has the ability to control water levels during plant establishment. For example, if the bioswale is designed to hold 24" of water during a rain event, significant inundation during plant establishment may kill the newly installed plants. The valve can remain open during plant establishment to ensure significant standing water does not occur. Once the plants mature, the valve can be closed and the bioswale can function as designed.
- e. Provide a water source for irrigation during plant establishment, especially when using a sand-based engineered soil matrix. Plants will need to be watered consistently for 6-8 weeks following installation and long-term may need supplemental water in times of extreme drought.

2. Bioswale Plant Selection Criteria –

- a. The key is to fully understand your bioswale's designed hydrology. Because the soils in the Village of Lemont do not typically percolate well, especially after construction, most bioswales tend to be designed with an engineered soil and underdrain system. This means that the soils will be wet during rain events, but will be dry for 85% of the year or more. Wetland plants will not survive or may perform poorly during long dry periods, though many upland species can easily withstand short periods of inundation. Ensure you select native species for the designed hydrology of your bioswale.
- b. At a minimum live native plants must be specified for the bottom of all bioswales. Native seed can be used along with the plugs and on the side slopes, but plugs are required to be planted on the bottom unless otherwise approved by the VILLAGE. Seed can be easily washed away by water flow and germination can too often be impeded by salt deposits from roads and parking lots.
- c. Plant height must be considered when designing a bioswale species list. Many bioswales are located next to parking lots and sidewalks, in which case a shorter plant palette should be chosen to ensure that plants do not inhibit pedestrian and automobile sightlines (Figures 2-15 through 2-17).
- d. See Figure 2-13 for planting zone cross sections and Appendix A for the VILLAGE approved native seed and plant mixes.

B. Rain Gardens and Bioinfiltration Basins – Similar to bioswales, rain gardens and bioinfiltration basins are intended to catch runoff and improve water quality. The difference is that rain gardens are not designed to convey water.

1. General Design Criteria –

- a. Apply the bioswale design criteria and see Figure 2-18.

2. Rain Garden and Bioinfiltration Basin Plant Selection Criteria –

- a. Apply the bioswale plant selection criteria and see Appendix A for the VILLAGE approved native seed and plant mixes.
- b. Often implemented by homeowners, rain gardens can direct stormwater to a planting bed so that the rest of the yard stays dry or water does not travel directly to the road and into the storm sewers. Rain gardens may have more of a specific aesthetic value implemented by choosing showy plants and those that specifically attract beneficial wildlife.

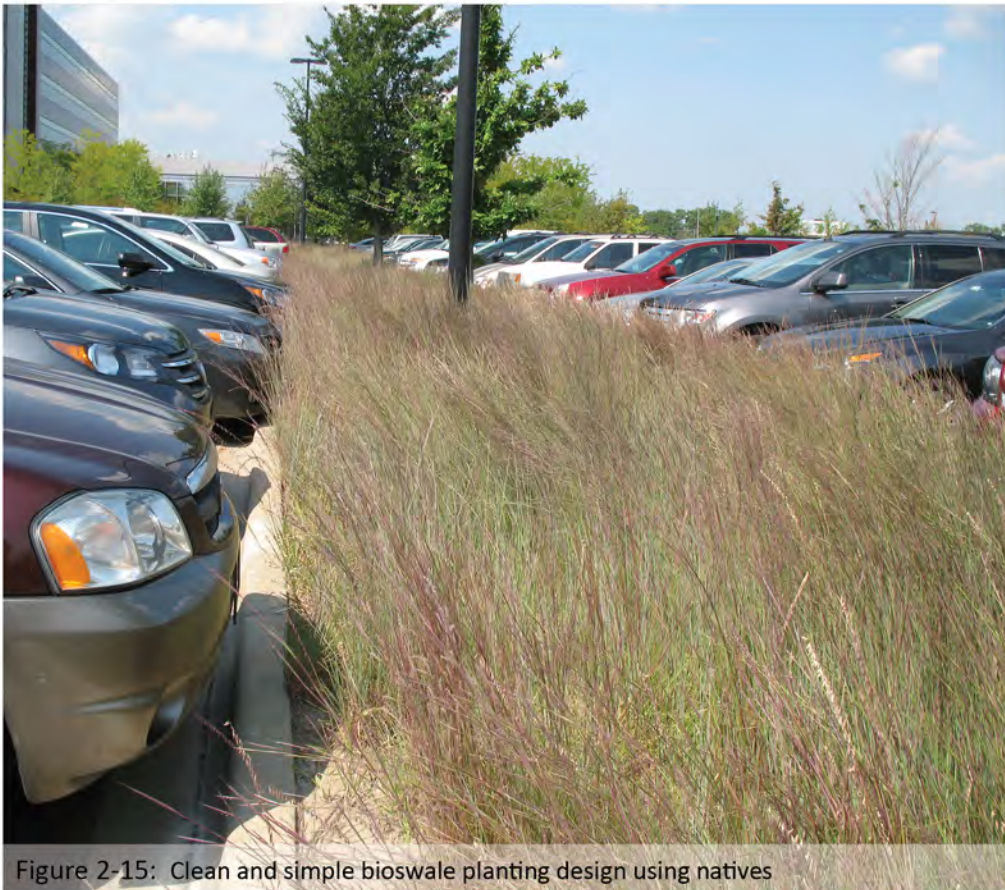


Figure 2-15: Clean and simple bioswale planting design using natives



Figure 2-16: Poor Bioswale Planting Design



Figure 2-17: Poor Bioswale Planting Design

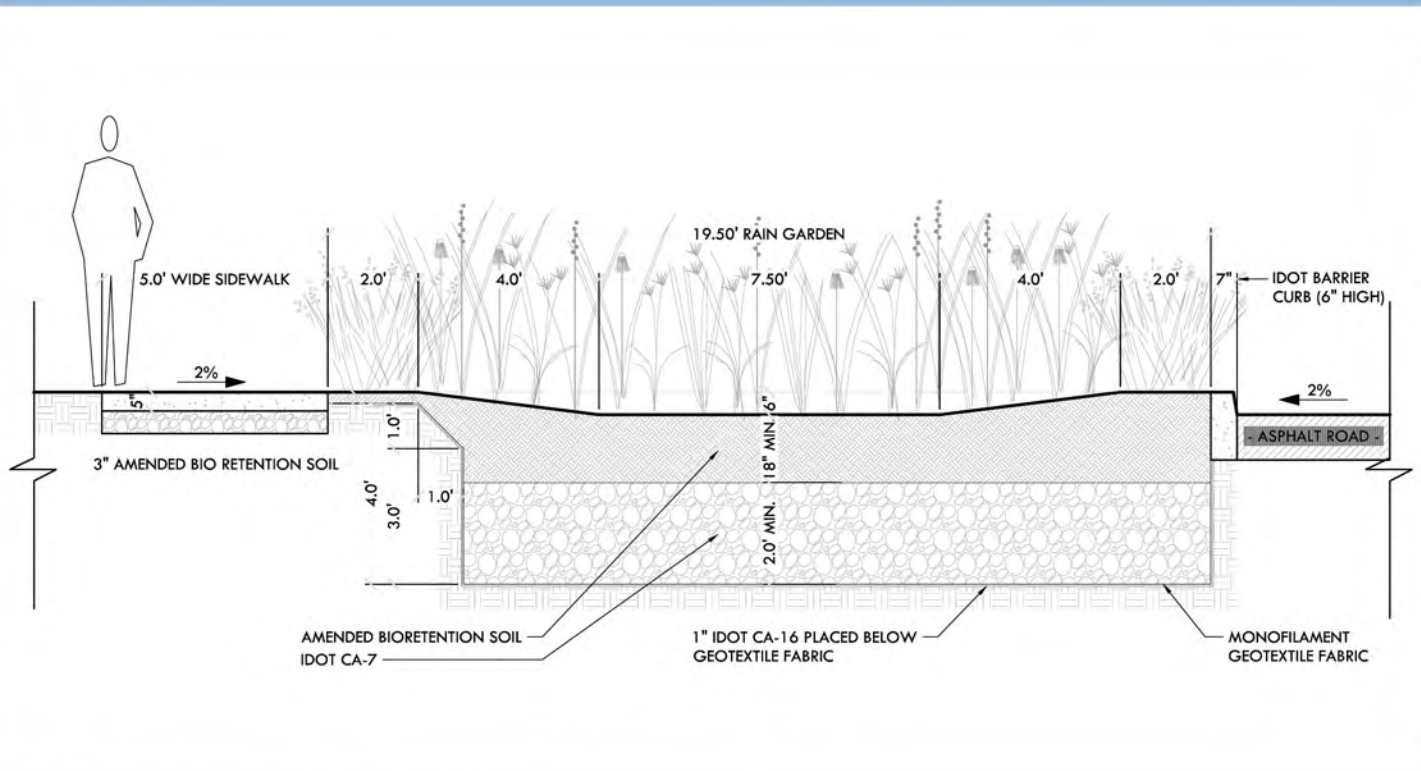


Figure 2-18: Example Rain Garden Cross Section





SECTION

# 3

## CONSTRUCTION & PLANTING GUIDELINES

Proper site preparation and installation techniques are the ultimate component to successful native planting establishment. Ensuring that your design specifications include a detailed, well thought out installation program should rule out many costly mistakes, reduce reinstallation needs, and lead to quicker plant establishment. In an effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the minimum baseline design criteria that should be followed when developing construction plans and specifications.

The Village must review and approve all proposed native planting plans for new development within the Village. For plan review purposes, a submittal checklist has been developed to summarize plan requirements for native planting plans, refer to Appendix E.

### 3.01 Site Preparation

#### 3.01.01 Existing Vegetation Protection

Prior to beginning design, survey and create a general inventory of existing vegetation throughout the project site. Village Ordinance requires that existing trees, wetland, and riparian areas be identified on any proposed development plans. The VILLAGE also encourages developers to assess the ecological quality of those areas and any other areas on the development site that might be considered high quality (e.g. a prairie remnant or shrubland). The developer should make every effort to preserve identified areas of high quality existing vegetation and protect them appropriately during construction. Protection measures are to be detailed within the construction plans and specifications, but generally include:

- A. Tree Protection – Mature trees slated to remain should be protected from direct damage to trunks and limbs, however equally important is to protect the root zone from filling and compaction. The majority of a tree's feeder roots are within the top two inches of soil. This is how a tree gets much of its water and oxygen. If the feeder roots are smothered by the placement of fill, compaction due to vehicles, tilling, or soil excavation, the tree may be severely damaged or die.
- B. Wetland Protection – Wetlands that are not being impacted by the developer should be protected by placing silt fencing around the perimeter of the required wetland buffer. The VILLAGE encourages developers to include restoration and management plans for existing wetlands as part of the land development process. Quality restored wetlands benefit the community and make the development more marketable. **Mitigation wetlands that have been approved by the appropriate regulatory agency shall be designed following these design standards.**
- C. Other Natural Areas Protection – High quality remnant natural areas or reconstructions should be protected by erecting temporary high visibility fencing to deter equipment from damage during construction.

#### 3.01.02 Brush and Tree Clearing

Site preparation begins with the removal of undesirable woody and/or herbaceous plant materials (Figures 3-1 through 3-3). Brush and trees identified for removal on approved plans may

be cut by hand or with mechanized equipment.

- A. General vehicle traffic in natural areas should be restricted as much as possible. To minimize impact on soil structure, remnant integrity, and restoration potential, clearing and brush cutting should be performed when soils are dry and/or froze. When possible, low ground pressure equipment should be used.
- B. Hand removal is the VILLAGE's preferred method of brush or tree removal and typically involves the use of chainsaws, hand saws, and loppers.
- C. Mechanized removal typically involves the use of large wheeled or tracked vehicles equipped with large mowing or grinding implements.
- D. All cut stumps should be treated with an appropriate herbicide by a licensed professional immediately following cutting, ensuring that the herbicide is applied to the cambium layer of the woody plant.

#### 3.01.03 Graded Site Preparation

The following design criteria pertain to agricultural row-crop fields and sites that have undergone grading (earth moving) and will be restored using native plantings.

- A. The Natural Areas Contractor shall coordinate with the Grading Contractor to ensure proper handling within planting areas. A preconstruction meeting and at least one (1) meeting during construction shall be held in order to coordinate equipment movement within planting areas to avoid/reduce soil compaction and to review underground utility location maps and plans. This meeting shall be coordinated by the Construction Project Manager. The following tasks may be performed by the Grading Contractor with proper coordination, though it is the responsibility of the Natural Areas Contractor to ensure that the native planting areas are prepared according to this document.
- B. After the completion of subgrade preparation the Natural Areas Contractor shall till soil to a depth of four (4) inches within areas designated for native seed mixes (Figure 3-4). When conditions are such that, by reason of drought, frost, excessive moisture, or other factors satisfactory results are not likely to be obtained, the work will be suspended and shall resume only when conditions are appropriate. Undulation or irregularities in the surface that would interfere with the Natural Areas Contractor's operations or maintenance shall be leveled before the next operation (Figure 3-5).
- C. In newly graded areas, spread topsoil to a minimum depth of 6" meeting the thickness, grades, and elevations shown on engineering plans after light rolling and natural settlement (Figure 3-6). When conditions are such that, by reason of drought, frost, excessive moisture, or other factors satisfactory results are not likely to be obtained, the work will be suspended and



Figure 3-1: Clearing of a project site infested with buckthorn and invasive species



Figure 3-2: Post clearing photo illustrating an open ground plane



Figure 3-3: The same site the summer after brush clearing and seeding

Clearing the invasive brush within wooded sites allows light to reach native plants that were stifled by their presence. Once the brush is removed suddenly these plants have the resources and space to grow. Unfortunately, so do weeds. If a rigorous maintenance routine and planting strategy isn't immediately implemented the site will revert back to the unsightly and impenetrable brush.



shall resume only when conditions are appropriate. Add specified soil amendments and mix thoroughly into the upper four (4) inches of topsoil. Delay mixing fertilizer with topsoil if planting will not proceed within 72 hours of spreading. If required, mix lime with dry soil before mixing fertilizer.

1. Spread approximately  $\frac{1}{2}$  the thickness of topsoil over loosened subgrade. Work into top of loosened subgrade to create a transition layer. Spread remainder of planting soil.
- D. Prior to beginning seeding/planting operations the Natural Areas Contractor shall:
1. Confirm topsoil placement by the Grading Contractor within all planting zones.
  2. Request copies of soil test results for review. If soil test results are not available, Natural Areas Contractor shall conduct soil testing as per the products section of this document. If soils do not meet specification it shall be amended or replaced by the Natural Areas Contractor prior to beginning seeding/planting operations.
  3. Confirm that the Grading Contractor has removed all foreign matter and/or soil clods larger than two (2) inches in any dimension within the areas to be seeded. Natural Areas Contractor shall be responsible for removing all foreign matter prior to beginning seeding/planting operations.
  4. Check compaction of topsoil (0-6" depth) and normal subsoil depth (6-12" depth). Soil should be loose and friable. A 200 pound person should leave a  $\frac{1}{4}$ " –  $\frac{1}{2}$ " deep footprint.
- E. Natural Areas Contractor shall utilize equipment having low unit pressure ground contact within planting areas. They shall take precautions to ensure that equipment and vehicles do not damage the grading, utilities, structures, or existing trees and shrubs during planting operations. Any damage shall be repaired by the Natural Areas Contractor.
- F. Non-native perennial species may require control with a low toxicity (2% mixture), non-persistent glyphosate based herbicide. Under no circumstances are persistent herbicides to be used. Apply herbicides as needed after grading operations.
- G. Allow 10-14 days after spraying herbicides prior to cultivating for seed bed preparation. Check for weed growth. Reapply herbicide when the weeds are 2-3 inches tall. Wait 10 days and rake smooth. Do not compact.

#### 3.01.04 Vegetated Site Preparation

The following design criteria pertain to remnant sites undergoing restoration and areas with degraded existing vegetation that will be restored using native plantings.

- A. Planting areas that contain solid stands of existing

non-native/weedy herbaceous vegetation and are not to be disturbed by grading operations, or have been graded and now have established non-native/weedy herbaceous vegetation, shall be treated with applications of a glyphosate herbicide resulting in a complete kill of all existing vegetation. Broadcast or "boom" spraying of herbicide is acceptable under these conditions; precautions shall be taken to eliminate damage from overspray.

- B. Planting areas that contain existing desirable native herbaceous vegetation and are not to be disturbed by grading operations shall be treated with applications of an appropriate selective herbicide, resulting in a 99% kill (brown-out) of non-native/weedy herbaceous vegetation and the survival of existing desirable native herbaceous vegetation. Limited spot applications of herbicide shall be utilized if conservative native plant species within the planting area to be preserved.
- C. Planting areas that are heavily vegetated with persistent species such as fescues (*Festuca spp.*), reed canary grass (*Phalaris arundinacea*), or Canada thistle (*Cirsium arvense*) often require two or more herbicide applications at 2-3 week intervals to kill resprouts and seedlings from the existing seed bank.
- D. Herbicide applications in or adjacent to shorelines or open water shall utilize an herbicide approved for aquatic use.
- E. Mowing and/or prescribed fire may be required to eliminate standing biomass prior to seeding. Conduct mowing and/or prescribed fire as shown on the plan(s).
- F. Seed-to-soil contact is critical for native seed germination and plant development. Wherever biomass, thatch, or any other debris remains on the soil surface that will inhibit good seed-to-soil contact, the Native Areas Contractor shall "hard rake" the soils within vegetated planting areas prior to seed installation utilizing a gill rake, forestry mower, power dethatcher, or other method intended to expose the existing site soils for proper seeding (Figure 3-7). In areas with obstructions preventing the use of mechanized equipment, the Natural Areas Contractor shall scarify the existing soil with hand tools (Figure 3-8). Care shall be taken within the drip line of existing trees to ensure that no more than two inches (2") depth of soil is disturbed. Prior to conducting soil scarification operations, the Native Areas Contractor shall submit their proposed plan to the VILLAGE for approval.
- G. Native Areas Contractor **shall not** disc or roto-till the soils within vegetated planting areas prior to planting, unless the area(s) have been heavily trafficked/compacted or as otherwise directed by the VILLAGE. Whenever vegetated planting areas are disturbed, they shall be prepared for planting as per the "GRADED SITE PREPARATION" section of this guideline.
- H. Natural Areas Contractor shall utilize equipment having



Figure 3-4: Tilling the soil



Figure 3-5: Ruts in the soil to be smoothed



Figure 3-7: Removing debris & prepping site



Figure 3-6: Acceptable prepared site



Figure 3-8: Hand racking in seed



low unit pressure ground contact within planting areas. They shall take precautions to ensure that equipment and vehicles do not damage the grading, utilities, structures, or existing trees and shrubs during planting operations. Any damage shall be repaired by the Natural Areas Contractor.

#### 3.01.05 Soil Testing & Amendments

Soil analysis and testing can determine the ability of a site to support vegetation. If the history of the site or the soil brought to the site is unknown, this simple and inexpensive preventative step can save residents and developers money by reducing the likelihood of an unsuccessful installation. The VILLAGE have established the following minimum criteria to be applied within native planting areas:

- A. Soils within the bottom of stormwater facilities (detention basin bottoms, naturalized swales, etc.) that have had the potential to be exposed to over-winter road salt drainage prior to native seed installation shall be tested by an independent laboratory regarding its suitability for native seed germination.
- B. If it is discovered that a soil's condition will inhibit native seed germination, the Native Landscape Contractor shall submit a soils mitigation plan to the VILLAGE for approval prior to installation of native seed. The soil mitigation plan may include soil amendments to

correct soil structure, nitrification and/or chemistry, or it may include the importation of suitable topsoil approved by the VILLAGE.

1. The testing laboratory and/or an Agronomist should determine whether a soil's condition will inhibit native seed germination based upon the full results of the soil test. However, in general a soil condition that inhibits native seed germination is one that *typically*\* exhibits one of the following characteristics:
  - a. pH outside of the range of 6.5 – 7.5
  - b. Exchangeable Cations of Sodium (NaCl) above 100 lbs/acre
  - c. Base Saturation (Percent) of Sodium (NaCl) above 1%
  - d. Base Saturation (Percent) of Magnesium (Mg) above 12%
  - e. Soluble Salts measuring above 2 mmhos/cm

\*the above characteristics/limitations are generalities, the soil test needs to be evaluated in its entirety by qualified personnel in order to determine its suitability for native seed germination.

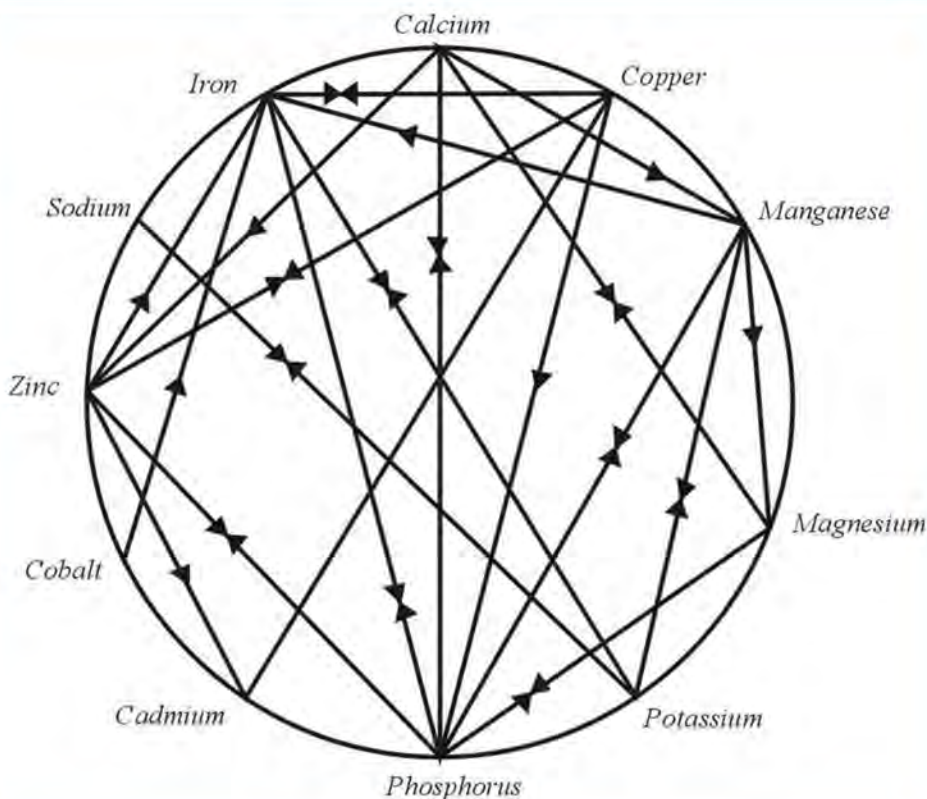


Figure 3-9: A mineral wheel illustrating the relationships between minerals within the soil is shown on the left. The location of the arrows represent the effect one mineral has on the availability to a plant of another mineral. For example, the absorption of zinc is dependent upon phosphorus, calcium, and iron. Higher levels of phosphorus inhibit the uptake of zinc but increase the availability of magnesium and so on. Many minerals rely on others to be present which is why it is important to test soils before investing the money to implement a natural area. It may be difficult to add the necessary soil amendments after a planting has been installed without damaging the existing vegetation.

### 3.01.06 Miscellaneous Considerations

During construction of a development, there are many activities going on at the same time involving several different contractors, designers, regulators, etc. Prior to installing native seed or plants, it is advisable that the Natural Areas Contractor effectively communicate with the rest of the development team that they are going to begin installation so that some

**Natural areas take 3-5 years to develop, so they can appear weedy or unplanted to the untrained eye. An individual may think they are not hurting anything if they drive through the area or store their building scraps in your prairie.**

of the common missteps can be identified and resolved prior to installation. If these issues arise, they typically result in the contractor having to re-seed and/or re-plant adding significant cost and time to the project. The VILLAGE has identified some of the common pitfalls below, but there may be others specific to your project.

- A. Stormwater Risers or Outfall Restrictors – Often during construction, the developer is required to install a temporary riser or restrictor in the outflow pipe of stormwater basins for sediment control during construction. Risers and restrictors will artificially raise the normal water level of a basin to allow soil in the stormwater to settle out prior to leaving the basin. This means that if the basin is designed to be dry-bottom it is common for it to consistently hold one or two feet of water while the riser/restrictor is in place. As you can imagine, if the bottom of a basin is seeded or planted prior to the restrictor or riser being installed, the entire planting will be flooded and seed will wash away or live plugs killed. Talk with the General Contractor or Grading Contractor and be certain that all risers or restrictors are removed prior to seeding/planting and will not be replaced once the seeding/planting is complete.
- B. Water Control Structures – The VILLAGE recommends that a water control structure be considered in wet-bottom and retention basins. Typically these structures have a locking mechanism that prevents tampering with the water levels. The Natural Areas Contractor should ensure that they have access to manipulate the structure and final control over the water levels in the basin.
- C. Filter Fabric – It is common for filter fabric to be installed inside of catch basin grates to filter sediment from soil-laden stormwater entering the grate during construction. These drainage structures then tend to drain much more slowly than originally designed and may impact the hydrology of your site. This is most commonly an issue when these

structures are the main drainage outlet for a bioswale or rain garden feature, keeping them temporarily wet while the fabric is in place.

- D. Equipment or Vehicle Encroachment – Once an area has been seeded or planted, it is advisable for the Natural Areas Contractor to erect temporary fencing, barricades, signage, or some other structure to prevent other contractors working on the site from storing or driving equipment and vehicles into the native planting area. Unfortunately this is a common occurrence, particularly at the top of basin slopes where they abut lots, roads, or right of way areas.
- E. Landscaping – Landscape Contractors often do not realize how some of their standard practices can negatively impact the development of the native planting areas. For example, a Landscape Contractor may lay turf grass sod on a lot adjacent to a detention basin, apply an herbicide that prevents weed seeds from germinating, and then begin running an irrigation system. The water running off of the sod, carrying the pre-emergent herbicide, will wash down the side slopes of the adjacent basin preventing germination of the native seed that was recently installed. More commonly, Landscape Contractors or homeowners apply a “weed-n-feed” fertilizer to their lawn and overspray into an established native planting. The herbicide in that application is a broadleaf herbicide and will kill all of the wildflowers that it contacts. It is in the best interest of the developer to ensure that the Natural Areas Contractor is in close coordination with the Landscape Contractor during construction and during ongoing maintenance.
- F. Dumping – Throughout the construction process and once homes are occupied by residents, dumping of waste materials in the native planting areas may be an ongoing problem. Building Contractors may clean out their concrete trucks or dump excess gravel in your planting area. Homeowners may dump grass clippings and yard waste in your planting area. Fencing, barricades, or signage may help prevent some dumping, but the Natural Areas Contractor should plan on regular site inspections so they can identify and remove any dumped materials before they can permanently damage the planting.

## 3.02 Seed Installation

Seeding is the main approach to large-scale native planting implementation because it is economical, though it does take three to five years before good establishment is achieved and requires the contractor to be experienced and knowledgeable in native plant development.

### 3.02.01 Timeframe

The time of year that native seed is installed for a native planting project is very important in determining a successful outcome.



In comparison to traditional turf grasses that are cool season (seeds germinate and the greatest vegetative growth is in cool soil conditions), most native seed mixes contain both cool season and warm season (seeds germinate and the greatest vegetative growth is in warm soil conditions) species. In addition, many native plants produce seed that is initially dormant. Native seed dormancy is an adaptive trait, allowing germination to occur over time and during the proper season. This vital trait prevents the germination of all seeds at a time that might be suboptimal, or even lethal, for seedling establishment. Seed dormancy is broken through a process called "stratification" and usually consists of scarification (scratching of the seed coat to allow moisture penetration) or extended exposure to cold, moist conditions (over wintering). To help ensure optimal conditions for seed germination, the VILLAGE has provided the following minimum criteria for the timing of native seed installation. Alternative seeding timeframes must be approved by the VILLAGE and may trigger additional requirements, such as irrigation or artificial stratification.

A. NON-STRATIFICATION SEED MIXES:

1. Non-Stratification seed mixes are those consisting of 60% or more species by seed count that do not require cold moist stratification periods of 30 days or more.
2. Optimal Installation Timeframe
  - a. Spring: March 1<sup>st</sup> – June 30<sup>th</sup>
  - b. Dormant: September 15<sup>th</sup> – October 31<sup>st</sup>

B. STRATIFICATION SEED MIXES:

1. Stratification seed mixes are those consisting of 60% or more species by seed count that require cold moist stratification periods of 30 days or more.
2. Optimal Installation Timeframe
  - a. Dormant: November 1<sup>st</sup> – December 31<sup>st</sup>

C. GRASS MONOCULTURE SEED MIXES:

1. Grass monoculture seed mixes are typically comprised of warm season grass species requiring 60-70° soil temperatures to germinate.
2. Optimal Installation Timeframe
  - a. June 1<sup>st</sup> – July 15<sup>th</sup>: Seeding during this period is required for germination and appropriate establishment. Consistent irrigation shall be provided.

### 3.02.02 Seeding Methods

- A. All seeding and planting zones/locations shall be laid out and marked on the project site by the Natural Areas Contractor according to the plan. No seeds or plants shall be installed until the seeding and planting zones/locations have been approved in writing by the VILLAGE.
- B. Seed shall be mixed with a cover crop consisting of *Avena sativa* (seed oats) at a rate of sixty (60) pounds per acre for spring plantings or ReGreen™ (wheat x wheatgrass hybrid) cover crop at a rate of fifty (50) pounds per acre for fall plantings and with a granular form of endomycorrhizal

inoculant at a rate of forty (40) pounds per acre.

- C. For Inter-Seeding into Existing Vegetation: Seed shall be drilled by a modified\* rangeland type no-till drill **designed to plant native grass and forb seed** (such as the Truax No-Till Drill, see Figure 3-10) if the soil is firm enough. Seed shall be drilled in at least two (2) separate runs where each application of seed shall overlap the previous application by one half (1/2) the weight to insure double coverage of seeded areas (example: seed in a north to south direction at ten pounds per acre, then overlap by seeding in an east to west direction at ten pounds per acre, resulting in a total coverage of twenty pounds per acre [twenty pounds per acre is an example only, see Appendix A for actual project seeding rates].) Each planting run shall overlap by a minimum of one (1) planting row. Some seed species require exposure to sunlight for germination, these species shall be planted separately, after drilling, utilizing the broadcasting method. [\*Prior to seeding, detach the bottom portion of half (1/2) of the small box seeding tubes so that the seed is surface sown instead of drilled into the soil]
- D. For Newly-Graded Sites or Other Loose Soil Conditions: Seed shall be drop-seeded by a rangeland type dropseeder **designed to plant native grass and forb seed** (such as the Trillion or Belco seeder, see Figure 3-10). Seed shall be installed in at least two (2) separate runs where each application of seed shall overlap the previous application by one half (1/2) the weight to insure double coverage of seeded areas (example: seed in a north to south direction at ten pounds per acre, then overlap by seeding in an east to west direction at ten pounds per acre, resulting in a total coverage of twenty pounds per acre [twenty pounds per acre is an example only, see Appendix A for actual project seeding rates].) Each planting run shall overlap by a minimum of six (6) inches. Some seed species require exposure to sunlight for germination, these species shall be planted separately, after dropseeding, utilizing the broadcasting method.
- E. If site conditions prohibit the use of mechanized seeding equipment, broadcasting of seed is acceptable on **exposed soil only**. If seed is broadcast, it shall be mixed with an equal amount of inert filter (such as sand, vermiculite, rice hulls, etc.) to enable an even distribution of seed. A mechanical broadcast seeder may also be utilized, such as the Truax Seed Slinger (Figures 3-13 and 3-14). Seed shall be broadcast in at least three (3) separate applications unless otherwise approved by the VILLAGE:
  1. Broadcast half (1/2) of the specified native grass seed first. Drag the seeding area utilizing a rake or similar equipment, work native grass seed into the soil achieving a final planting depth between 0.25" (1/4") – 0.5" (1/2").
  2. Broadcast remaining native grass seed, cover crop and one-third (1/3) of the remaining seed mixture (sedges/rushes/forbs), reserving 100% of any



Figure 3-10: Belco Greenscape Conservation Seeder



Figure 3-11: Seed Boxes

Rangeland dropseeders are the most effective method of seeding natural areas. They are equipped with seed boxes designed to hold different seed types and spread seed evenly in uniform rows over both newly graded sites or areas with existing vegetation. The seed planting rate can also be controlled to ensure excess seed is not wasted.



Figure 3-12: Uniform rows created by a Belco Greenscape Conservation Seeder



Figure 3-13: Hand Seeder



Figure 3-14: Hand Seeder

species indicated as “surface sown” in Appendix A. Lightly drag the seeding area utilizing a rake or similar equipment, working the native seed into the soil achieving a final planting depth between 0.0625” (1/16”) – 0.25” (1/4”).

3. Broadcast remaining seed directly atop prepared seedbed. Do not drag or rake.
  4. Where site conditions allow it, roll broadcast seeded areas immediately after installation to ensure good seed-to-soil contact.
  5. Depending upon the soil structure after preparation, this approach may require modification. On-site consultation with the VILLAGE is highly recommended.
- F. Do not sow seed in areas where standing water is present, during adverse weather, or when wind speeds exceed ten (10) miles per hour unless approved in writing by the VILLAGE.
- G. Seed shall be installed at a depth no greater than 0.25” (Figure 3-15).
- H. Hydroseeding of native seed is not acceptable. Hydromulch may be utilized as an erosion control method upon written approval by the VILLAGE.
- I. The Natural Areas Contractor shall rake, roll or drag broadcast seeded areas perpendicular to the slope within 24 hours after seeding, or as soon as site conditions permit. The use of compaction wheels on the seed drill or cultipacker on the dropseeder is acceptable.

#### 3.02.03 Erosion Control

Erosion control blankets are needed anytime planting is conducted on bare soil, especially slopes, and any planting conducted in the fall. Blankets used in restoration should be temporary biodegradable products and are typically made of straw, coconut fiber, or a combination thereof (Figure 3-16). Products using biodegradable netting, such as North American Green S-75BN, are preferred as snakes, birds, and other wildlife as they do not become entrapped in the netting as easily as the synthetic products. Excelsior wood fiber mats or permanent “Turf Reinforcement Mats” (TRM) should not be used; excelsior mat products are not very compatible with broad leaved vegetation (wildflowers) and TRMs leave permanent thick plastic netting on the soil that will make supplemental seeding/ planting efforts difficult if needed at a future date. After soil preparation install the native seed, install an appropriate erosion control blanket according to the manufacturer, and finally install plugs through the blanket, if necessary, ensuring not to damage the blanket (Figure 3-17). The VILLAGE has provided the minimum criteria below for erosion control blankets used within native planting areas.

- A. Erosion control measures shall be implemented immediately upon seeding completion. The VILLAGE

may reduce erosion control requirements based on site conditions and/or planting.

1. All seeded areas on newly graded sites shall include the installation of a temporary erosion control blanket.
2. All planting areas in direct contact with water (Normal Water Level of shorelines, swale bottoms, etc.) shall include the installation of temporary erosion control blanket (Figure 3-18).
3. All shorelines from a minimum of three (3) feet above normal water level (NWL) to a minimum of one (1) foot below NWL shall include the installation of erosion control matting.
4. Shorelines adjacent to consistently flowing water (streams, creeks, etc.) shall be protected with coconut fiber erosion control logs (Figure 3-19).
5. Alternate blanket types, applications or locations may be required as part of the SWPPP. See SWPPP and engineering plans for additional blanket requirements.

### 3.03 Plant Installation

Live plants establish more quickly than seed, but are more expensive and should be reserved to address specific situations where seed may not work or is not preferred. Situations best suited for plants include, but are not limited to: saturated soil or submerged soil situations where seeding is difficult or impossible, to establish species that have difficulty germinating from seed (such as shooting star or prairie dropseed), or in a landscape situation where control over plant location is desired. Live plants can also be useful in diversifying established natural areas.

#### 3.03.01 Timeframe

If possible, live native plants should be planted in the spring when temperatures are moderate and rainfall is more frequent. However, project schedules often change and installations occur and varying times throughout the growing season. Summer planting in June, July, or August is possible but will require supplemental watering until the plants become established. Fall planting is feasible as well as long as the installation occurs early enough to allow time for the roots to grow before the threat of frost.

- A. Optimal Installation Timeframe
  1. April 1<sup>st</sup> – May 31<sup>st</sup>
- B. Alternative Installation Timeframe
  1. June 1<sup>st</sup> – September 30<sup>th</sup>: Planting of live plugs during this period can only be conducted if consistent irrigation is provided.
  2. October 1<sup>st</sup> – March 31<sup>st</sup>: Planting of live plugs during this period can only be conducted if the shrink-swell potential of the soil is low.



Figure 3-15: Seed installation depth can not exceed 0.25" for successful germination



Figure 3-17: Plugs planted in erosion blanket



Figure 3-16: Hand seeding over a straw erosion control blanket



Figure 3-18: Erosion control blanket on a slope



Figure 3-19: Coir log being installed along a stream bank to hold grade

### 3.03.02 Planting Methods

The most efficient way to install live native plants is to utilize a power auger, such as the one manufactured by Stihl (Figures 3-20 and 3-21). The auger can be used to install plants through erosion blanket if done with care, however utilizing the sharp end of a pick axe to puncture the blanket and create a planting cavity is typically more effective. The most inefficient method of plant installation is by using hand tools, such as planting trowels or shovels. The VILLAGE has established the minimum criteria for native plant installation below.

- A. Live plug planting densities will vary according to project budget and project goals.
  1. Shorelines shall include planting within the "safety shelf" a minimum of five (5) live native plugs per linear foot of shoreline and shall be distributed from 6" above Normal Water Level (NWL) to 4-5' out from NWL.
  2. Live plugs shall be installed in full or half flats, creating drifts or groupings of 16, 19, 32, or 38 of the same species rather than planting all species intermixed randomly across the site. Plant spacing within each grouping will depend upon the species being planted, but shall be restricted to a minimum of 18" on center (OC) Alternate flat sizes may be used upon written approval by the VILLAGE.
  3. Live plugs shall be installed in holes drilled with an auger with the same diameter and depth as the live plug's root massing (within  $\pm .75"/-.25"$ ). In wetland and shoreline plantings where soil is soft and moist enough, a dibble bar or trowel may be used to create planting holes. Avoid severely damaging erosion control mat during plug planting operations.
  4. Insert live plugs into hole so that the final position of the root crown following planting, soil settlement, and initial watering is slightly below the soil surface (1/8 – 1/4 inch). All crowns shall be covered with soil.
  5. Ensure that live plugs are not loose after planting. In wetland or shoreline areas with the potential for high wave action, or highly fluctuating water levels that may dislodge newly planted live plugs, plugs shall be secured with 6-8 inch "U"-shaped wire erosion control blanket staples. Staple length shall be determined by the density of the planting substrate; softer substrates require longer length to hold plugs adequately.
  6. Each live plug shall be flooded with approximately 50 ml of water after insertion into the ground.

### 3.03.03 Herbivory Protection

Herbivory must be kept in mind when planting native plants, particularly when planting them in close proximity to water. Native plantings are often damaged by waterfowl, muskrats, or by rough species of fish like carp. Exclosure netting can be erected to effectively keep waterfowl away from newly planted areas (Figure 3-22). The VILLAGE has established minimum criteria for waterfowl exclosures below.

- A. Waterfowl exclosures shall be erected around all live native plants that have been planted in areas where there is a potential for herbivory by waterfowl (especially geese), such as retention basins or other planting areas adjacent to open water. Install live plugs and goose exclosure fencing in 100' – 200' lengths, leaving 4-6' wide openings between exclosure ends to allow access to the water for people and other wildlife during the establishment period.
  1. Install steel T-posts at twelve (12) feet on-center (maximum). Drive posts into the ground so that the exclosure will extend at least two (2) feet in height above the tops of planted live plugs.
  2. Attach black UV stabilized poultry netting securely to the steel T-posts with plastic zip-ties.
  3. Attach nylon rope to the top of steel T-posts in a zigzag pattern to prevent aerial landings by waterfowl.
  4. The Natural Areas Contractor shall disassemble and remove all waterfowl exclosures from the project site after two (2) complete growing seasons. The VILLAGE may request removal of the exclosure prior to the two (2) year term ending.
  5. The Natural Areas Contractor shall maintain the exclosure in a functional and aesthetic condition. The Natural Areas Contractor shall make all required, reasonable repairs and/or replacements in a timely manner.
- B. Additional protection measures may be required to protect shoreline and wetland plantings from herbivory or damage, particularly by muskrats and carp. Waterfowl exclosures are typically not effective against other types of herbivory or damage. If muskrats present a problem they need to be trapped prior to causing severe damage (Figure 3-23). If carp present a problem a fish kill and/or benthic mesh should be considered. Herbivory or damage of plant material by wildlife shall not relieve the Developer from meeting the performance criteria, unless approved in writing by the VILLAGE.



Figure 3-20: Power auger efficiently drills holes



Figure 3-21: Carefully insert plugs into holes by hand and fill in with soil as needed



Figure 3-22: Goose Exclusion

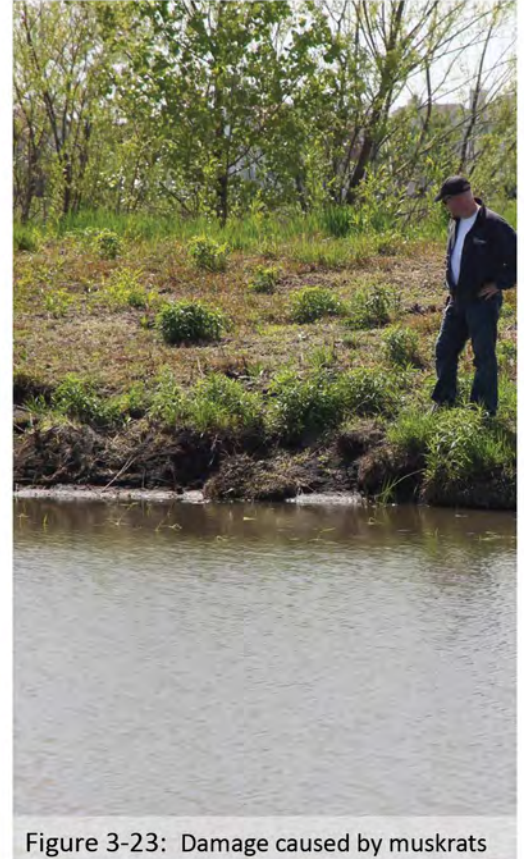


Figure 3-23: Damage caused by muskrats





SECTION

# 4

## MAINTENANCE GUIDELINE

Maintenance of native plantings during the establishment period and beyond is critical to achieving and maintaining an ecologically diverse and attractive natural area. In an effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the minimum baseline design criteria that should be followed when developing maintenance plans and specifications.

## 4.01 Maintenance Plan

Anyone wishing to use native plantings in their project must submit a short-term (Minimum 3 years after planting) and long-term maintenance and monitoring plan to the VILLAGE for review and approval. The VILLAGE has provided the following information and minimum criteria for inclusion into any native planting maintenance plan.

### 4.01.01 Establishment Maintenance Plan

The first three to five years of native planting maintenance is the most critical. It is during this time that a native planting will require the most intense and rigorous maintenance schedule. Figure 4-2 represents an example of a typical establishment maintenance activity schedule. During establishment, your native planting will require seven or more maintenance visits each growing season. The overall goal of the establishment maintenance plan should be to control weeds by not letting them reproduce, thereby reducing competition with the native plants for light, water and nutrients. It is imperative that the field crew have an understanding of a plant's life cycle so the appropriate maintenance strategy can be employed (Figures 4-3 and 4-4).

A. Life Cycle – The life cycle of various weedy plants dictates how to manage them. Some plants bloom early in the year and may need to be controlled in March and April, while others are best controlled in early fall, or even during the winter. In addition to the blooming period, knowing whether a plant is an annual, biennial, or perennial will guide effective management.

1. **Annual Species** – Many common weed species are annuals, meaning they germinate from seed, grow, reproduce, and die all within one year. Examples of annual weed species include foxtail, ragweed, and chicory. Mowing or hand pulling just before or while the plant is in flower is generally sufficient to control these species. Annuals take advantage of disturbance and can be expected to be heavily populated in a new planting, however they are not great competitors and will not be as big of a problem in the later years of a restoration project.
2. **Biennial Species** – Other weeds are biennial, meaning they germinate from seed and generally have only basal leaves (low to the ground) without flowers during the first year of growth. The second year, a mature plant is produced which flowers, reproduces, and dies. Examples of biennial weeds include Queen Anne's lace (also known as wild carrot), yellow and white sweet clover, and garlic mustard. These plants may be treated with herbicide or hand-pulled (with the root included)

in growth year one or early in growth year two, however any individuals that are not treated should be mown or otherwise removed just before or while the plant is in flower to ensure that it does not develop and distribute viable seed.

3. **Perennial Species** – Our most tenacious weeds are perennial; they bloom and produce seed year after year, storing energy in their roots over winter. Examples of perennial weeds include Canada thistle, cattails, most turf grasses, and curly dock. Herbicides are the best way to treat perennial weeds. Alternatively, perennial weeds may be hand pulled, but only if the entire root system is removed. Even if a perennial weed is cut back to the ground during the growing season, it typically contains enough energy in its roots to continue to grow year after year. Some invasive species such as Canada thistle spread by underground rhizomes (roots) and will continue to colonize even if mown and not allowed to set seed. Any perennial weeds that are not treated should be mown just before or while the plant is in flower to ensure that it does not develop and distribute viable seed.

### 4.01.02 Long-Term Maintenance Plan

Once a native planting area becomes established it will begin to out-compete many of the common annual and biennial weeds, though more aggressive weeds/invasive species will continuously be a threat to the health and aesthetic of any native planting area. Therefore it is the desire of the VILLAGE to ensure that any native planting area established within the Village of Lemont has a plan and an identified funding source for appropriate active management *in perpetuity*. Long-term native planting management strategies and responsible parties must be identified prior to approval of development plans proposing to use native plantings by the VILLAGE.

## 4.02 Maintenance Criteria

### 4.02.01 General Information

- A. Stewardship shall begin immediately after planting and continue for three (3) growing seasons or until Final Acceptance by the VILLAGE.
- B. The Natural Areas Contractor shall keep a log of all restoration activities performed during contract period, installation through stewardship, and shall submit it to the VILLAGE on a monthly basis.
- C. Chemicals used will have the lowest environmental impact for the task at hand. Organic or cultural practices will be used whenever practical.



Figure 4-1: Highly diverse and functioning natural area

**Control of Annual Weeds**

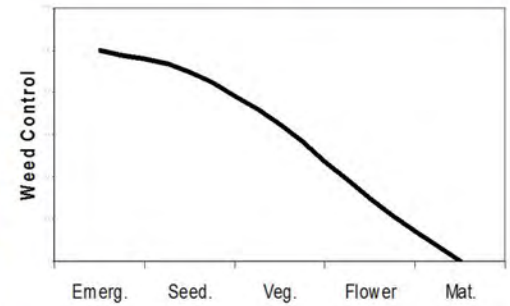


Figure 4-3: Annual weed control timeline

**Control of Perennial Weeds**

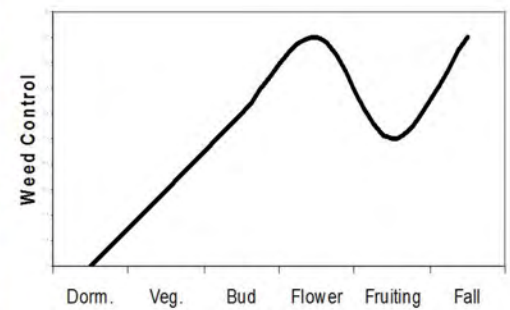


Figure 4-4: Perennial weed control timeline

Month	Visits by Crew	Herbicide	Brush Clearing	Mow	Collect/Disperse Seed
April	0-1	X	X		
May	1-2	X	X	X	X
June	1-2	X		X	X
July	1-2	X		X	
August	1-2	X		X	
September	0-1	X		X	
October	1-2	X	X	X	X
November	0-1	X	X		X
December through March	0-1	X	X		X

Figure 4-2: Suggested maintenance activities and recommended timeframe for natural areas



## 4.02.02 Native Planting Mowing

- A. All mowing shall be conducted in accordance with all applicable codes and by personnel with appropriate training in safety and in the use of the machinery being utilized.
- B. Mowing is a key aspect in achieving positive results. Mowing must be conducted by the Natural Areas Contractor on a consistent basis and must respond to seasonal weather. Vegetation shall be high-mown as follows:
  - 1. First Growing Season: Kept under twelve (12) inches. The VILLAGE recommends that the Developer budget for a **minimum** of five (5) mowings.
  - 2. Second Growing Season: Spot mow and observe. If non-native/weedy species are dominant, keep planting mowed at under eighteen (18) inches. The VILLAGE recommends that the Developer budget for a **minimum** of three (3) mowings.
  - 3. Third Growing Season: Spot mow and observe. If non-native/weedy species are dominant, keep planting mowed at under eighteen (18) inches.
- C. Mowing shall commence during late May/early June and subsequently four weeks apart or any time a large number of weed species begin to flower. Mowing shall be timed in a manner that prevents viable seed from being produced on site. Some species are able to develop viable seed when they are cut late in the flowering period.
- D. Mowing shall be conducted with a conventional rotary mower, sickle type mower, or a flail type mower. To reduce thatch, at no time shall more than six (6) inches (height) of vegetation be cut in a pass. Natural Areas Contractor shall ensure that cut materials are not allowed to drop seed or smother desired vegetation.
- E. On slopes that are too steep to mow, around structures (trees, fencing, buildings, etc.), and in areas that are too wet to mow, mowing shall be conducted with the use of a hand-held brush cutter or weed-whacker only. Damage caused to landscape material or other structures shall be repaired/replaced by the Natural Areas Contractor.

## 4.02.03 Herbicide Applications

- A. Spot Herbicide Applications
  - 1. Small scattered populations or individual specimens of undesirable species shall be controlled with spot herbicide applications. Large-scale colonization shall not be allowed.
    - a. Backpack Spray Treatments – Natural Areas Contractor shall utilize a 3-5 gallon backpack style sprayer, such as Solo, SP3, Field King or acceptable substitution (Figure 4-5).
    - b. Hand-wicking – In areas of high quality native vegetation where desirable species are

directly adjacent to targeted plants, or where the growth habit of the target plant makes it impossible to avoid off-target damage, the appropriate herbicide shall be selectively hand wiped onto the target plant utilizing a sponge-wicking applicator or a saturated cloth glove (Figure 4-6).

- 2. Site preparation and planting after herbicide applications shall be as per the Native Planting section of this document.
- B. Broadcast Herbicide Applications
  - 1. On larger sites where a broad-scale application is needed because large colonies of the target species have become established, broadcast applications by large tank-equipped spray-gun, all-terrain vehicle (ATV) or tractor may be utilized to treat undesirable species. The following methods are appropriate:
    - a. Broad-Spectrum Herbicide Broadcast Application – This method uses a large tank-equipped spray-gun and/or an ATV or tractor equipped with a boom-sprayer to apply large amounts of glyphosate, which will result in complete kill of all vegetation.
    - b. Selective Herbicide Broadcast Application – This method utilizes a large tank-equipped spray-gun and/or an ATV or tractor equipped with a boom-sprayer to apply large amounts of a selective herbicide, such as Ornamec, resulting in a complete kill of only those targeted species (in this case, grasses)
  - 2. A “large colony of target species” shall be defined as a target plant population whose aerial coverage is such that a broad-spectrum chemical can be broadcast while inflicting little damage to adjacent native vegetation.
  - 3. Site preparation and planting after herbicide applications shall be as per the Native Planting section of this document.
- C. Herbicide Application Timing
  - 1. Herbicide applications must be conducted by the Natural Areas Contractor on a consistent basis and must respond to seasonal weather and to the life cycle of each target species (Figure 4-7). Based upon the known life cycle of the most common non-native species that appear during restoration and the appropriate timeframes to conduct initial herbicide applications and follow-up applications, the VILLAGE recommends that the Developer budget for a **minimum** of seven (7) herbicide applications each growing season.



Figure 4-5: Herbicide application using backpack sprayers

The VILLAGE requires that all herbicides use a marker dye, such as Signal®, when applied in native planting areas to enable tracking of the application. The only exception is when applying herbicides within three feet of a roadway, sidewalk, structure or other feature where dyes may cause staining damage (staining should be temporary).



Figure 4-6: Gloves used for hand wicking

Target Species	Herbicides	Initial Herbicide Application	Follow-up Herbicide Application
Reed Canary Grass ( <i>Phalaris arundinacea</i> )	Sethoxydim* Aquatic Glyphosate	April 1st-May 31st	October 1st-Dormancy/Frost
Teasel Species ( <i>Dispsacus spp.</i> )	Triclopyr 3a*, Glyphosate	April 1st-May 31st	October 1st-Dormancy/Frost
Sweet Clover Species ( <i>Melilotus spp.</i> )	2, 4-D*, Clopyralid	April 1st-May 31st	October 1st-Dormancy/Frost
Cattail Species ( <i>Typha spp.</i> )	Aquatic Imazapyr	July 1st-August 1st	Use Clopyralid as needed throughout growing season
Purple Loosestrife ( <i>Lythrum salicaria</i> )	Triclopyr 3a*, Aquatic Glyphosate	May 15th-July 15th	August 1st-September 1st
Non-native Thistle Species ( <i>Carduus, Cirsium, &amp; Onopordum spp.</i> )	Clopyralid	May 15th-July 15th	July 15th - August 15th
Common Reed ( <i>Phragmites australis</i> )	Aquatic Imazapyr	August 1st-September 1st	September 1st - September 30th
Honeysuckle Species ( <i>Lonicera spp.</i> )	Triclopyr 3a (Foliar Application)	May 15th-July 15th	July 15th-August 15th
	Glyphosate (Cut-Stump/Basal Bark Application)	November 15th-March 15th (During Dormancy)	Follow-up should be Foliar
Other Woody Species (Includes <i>Rhamnus spp.</i> )	Triclopyr 3a (Foliar Application)	May 15th-July 15th	July 15th - August 15th
	Triclopyr 4e (Cut-Stump/Basal Bark Application)	November 15th-March 15th (During Dormancy)	Follow-up should be Foliar

Figure 4-7: Herbicide application table by species



**4.02.04 Hand Weeding**

Hand weeding is simply removing by hand individual undesirable plants. Hand weeding will be necessary for maintaining native planting areas just as it is necessary for maintaining landscaped areas (Figure 4-8). Annual and second-year biennial weeds are often best controlled via hand weeding because their root systems are not as well-developed as perennial weeds, so they are easily pulled from the ground. It is often best to hand weed after a rain, when the roots are easily pulled from the ground. Hand weeding should be carefully performed (or not at all) in newly seeded areas to avoid further disturbance to the soil. Hand weeding is typically conducted in concert with herbicide applications.

- A. In the event that herbicide applications cannot, or should not, be performed due to social, cultural, environmental, or other verified reasons, target weed species shall be removed by hand.
  1. Species targeted for complete hand weeding shall include removal of all plant parts from the soil, including the above ground growth and all roots or rhizomes present in the ground.
  2. Species targeted for partial hand weeding shall include removal of plant reproductive parts (i.e. seed heads). Partial hand weeding shall be conducted in concert with, or shall be followed up with herbicide applications.
  3. Removed vegetative materials shall be discarded off-site or left on-site in a manner that will not allow regeneration or seed set of the removed species. Some species such as garlic mustard may set seed even after being removed from the ground while flowering. These species must be removed from the site. Transportation of removed vegetative materials shall meet Department of Agriculture standards/requirements.
  4. Hand weeding shall never result in excessive soil disturbance.
  5. If hand weeding is necessary, it shall at a minimum be conducted in the same intervals as is required for herbicide application timing.

**4.02.05 Treatment of Woody Species**

- A. The Natural Areas Contractor shall conduct woody species herbicide treatments to all re-sprouts, re-growth, or other remaining live plants of all non-native or aggressive native woody species throughout stewardship operations until performance criteria have been achieved (See Section 5).
- B. Woody species treatment methods during the growing season may be a foliar application using an appropriate herbicide, such as Garlon 3a (Figure 4-9). Damage to surrounding vegetation due to re-sprout treatments shall be repaired by the Natural Areas Contractor.
- C. Woody species herbicide treatments during the dormant season may be applied with cut-stem and/or

basal bark application using an appropriate herbicide, such as Garlon 4e. Damage to surrounding vegetation due to re-sprout treatments shall be repaired by the Natural Areas Contractor.

1. **Hand Cutting/Cut-Stump Treatment:** Chain saws, brush clearing saws, handsaws, and loppers may be used (Figure 4-10). Upon written approval by the Owner/Owner's Representative, small walk behind mower-type brush cutters may be used provided that their use does not result in rutting or pitting of the soil while in operation.
    - a. Cut woody target species shall be treated with an herbicide mixture. After cutting down the target species apply herbicide, such as Garlon 4e in a 20-30% (or as stated on the product label) solution in basal oil, to the stump. *Lonicera spp.* shall be treated with Roundup in a 25-50% solution, to the stump. Treat the cut area around the edge with herbicide so the cambium layer will take up the active ingredient. Herbicide shall be applied immediately after cutting.
  2. **Basal Bark:** Involves herbicide application directly to the trunk of the woody target species that are one inch or less at the base. Apply herbicide directly to the tree trunk, around the entire circumference, at 6" above the soil until thoroughly wet near the ground plane, but not to the point of runoff. Apply during dormancy, except when snow or water prevents spraying to the ground plane. Optimal results are achieved when applications are made to young stems which have not developed thick bark.
- D. Wherever possible herbicide applications shall be accomplished by utilizing wick or sponge-type applicators (Figure 4-11).
  - E. All cuttings longer than two (2) feet in length or larger than one (1) inch in diameter shall be removed from the project site or burned on site. Smaller cuttings and debris from shredding or chipping may be left on site to decompose or to be consumed by prescribed fire (if applicable). Cuttings and debris shall not be allowed to accumulate to a depth that will smother existing desirable native species, prevent existing desirable native species from emerging, or prevent appropriate seed-to-soil contact in newly seeded areas (approximately one-half inch maximum depth).
  - F. When working within woodland areas or areas that contained significant brush and tree removals as part of the original restoration, the VILLAGE recommends that the Developer budget for a minimum of three (3) woody re-sprout treatments each growing season



Figure 4-8: A Natural areas maintenance crew hand pulling weeds



Figure 4-9: Basal bark treatment



Figure 4-10: Hand cutting invasive brush with chainsaws and appropriate safety gear



Figure 4-11: Stump treatment with sponge



**4.02.06 Landscape Bed Maintenance**

All landscape beds that occur within designated natural areas shall be maintained by the Natural Areas Contractor. This includes all trees, shrubs, and perennial beds (Figure 4-12). The VILLAGE has provided the minimum criteria below related to regular maintenance of Landscape Beds within all natural areas.

**A. General**

1. Tree rings and/or other areas of non-lawn landscape containing plants within designated management areas shall be considered a "Landscape Bed" for the purposes of this document.

**B. Mulch Management**

1. Landscape beds shall receive a new mulch dressing by May 1<sup>st</sup> of each growing season. Mulch dressing shall be applied at a minimum of one (1) inch thick.
2. Landscape bed mulch shall be turned over a minimum of four (4) times per growing season.

**C. Edging**

1. Landscaped beds and tree rings shall be edged during the first maintenance visit and as otherwise necessary throughout each growing seasons. The VILLAGE recommends that the Developer budget for a minimum of three (3) landscape bed and tree ring edging occurrences each growing season (Figure 4-13).

**D. Pruning and Dead-Heading**

1. Shrubs, ornamental trees, and qualified canopy trees shall be assessed/pruned a minimum of three (3) times per growing season to remove dead or damaged branches, to develop a natural form and improve the health of the plant. Qualified canopy trees shall be those three (3) inches DBH or smaller.
2. Spent flower heads of perennial flowering plants shall be removed a minimum of three (3) times per growing season.
3. All herbaceous plant material (flowers and grasses) shall be cut back to ground level and removed from the site by November 30<sup>th</sup> of each growing season, or as otherwise agreed to in writing by the VILLAGE.

**E. Hand Weeding**

1. In the event that weed content exceeds a height of four (4) inches and/or herbicide applications cannot, or should not, be performed due to social, cultural, environmental, or other verified reasons, target weed species shall be removed from landscape beds by hand.
  - a. The VILLAGE recommends that the Developer budget for a minimum of six (6) hand weeding applications within landscape beds each growing season.
  - b. Species targeted for complete hand weeding shall include removal of all plant parts from the soil, including the above ground growth and all

roots or rhizomes present in the ground.

- c. Species targeted for partial hand weeding shall include removal of plant reproductive parts (e.g. seed heads). Partial hand weeding shall be conducted in concert with, or shall be followed up with herbicide applications.
2. Hand weeding of landscape beds shall occur as often as necessary to ensure that landscape beds appear tidy and weed-free.
  3. Removed vegetative materials shall be discarded off-site or left on-site in a manner that will not allow regeneration or seed set of the removed species. Transportation of removed vegetative materials shall meet Department of Agriculture standards/requirements. Hand weeding shall never result in excessive soil disturbance. For highly visible public sites the VILLAGE reserves the right to direct the Contractor to collect and dispose of all hand-pulled vegetation off site.

**4.02.07 Over-seeding and Re-Planting**

Over-seeding or re-planting may be necessary for compliance with the performance section of this document. Follow the criteria for seeding or planting as outlined earlier in the guideline.

**4.02.08 Seed Collection & Distribution**

Once a natural area becomes established, seed collection and distribution should become a regular part of the management plan (Figures 4-14 and 4-15). Native seed should be collected at appropriate times for each species. Disperse collected seed over the site after a spring or fall clean up or after conducting prescribed fire to improve density or biodiversity. Collected seed can also be seeded in bare spots caused by natural disturbance, repairs, or herbicide applications.

Seed collection and distribution is a great volunteer activity., Offering volunteer opportunities encourages the surrounding community to become more engaged in the establishment of the natural area(Figure 4-16).

**4.02.09 Prescribed Fire**

Fire was a frequent part of pre-settlement native ecosystems and maintained the integrity of natural areas. Fire stimulates plant growth, prevents unwanted brush encroachment, and recycles nutrients. While fire was historically caused by lightning strikes and used by Native Americans, fire suppression post-European settlement allowed brush to invade open prairies and woodlands, shading out many sun-loving plants. In native planting management, prescribed fire is one of the most efficient and inexpensive ways to renew and protect our natural areas while simultaneously increasing site aesthetics.

Newly seeded areas should be allowed to establish for 2-3 growing seasons prior to prescribed fire application. Prescribed



Figure 4-12: Maintained Native Landscape



Figure 4-13: Distinct landscape bed edge



Figure 4-14: Seed collection



Figure 4-15: Native seed



Figure 4-16: Volunteers assisting with native seed collecting and dispersing

fires are typically conducted between the months of November and April, however the VILLAGE prefers that burning be conducted in the fall to promote better wildflower production and to minimize the impact on nesting birds and other animals. We recommend that when areas become burnable that the entire area be burned annually for 5-7 years to aid in plant establishment. Once the area is well established, an alternating burn schedule can be implemented if desired, doing so maintains unburned areas as wildlife refugia.

Prescribed fire should be conducted by highly trained personnel with appropriate permits and following an approved burn plan (Figure 4-17). The VILLAGE has provided minimum criteria regarding prescribed fire below.

#### A. GENERAL

1. Prescribed fire may be employed as a native planting management tool with written authorization from the VILLAGE and is contingent upon attainment of all required permits by the Natural Areas Contractor.

#### B. PERSONNEL/TRAINING

1. It is required to have highly trained and experienced employees working on a prescribed fire (Figure 4-18). The Natural Areas Contractor must meet the requirements specified under "Contractor Qualifications;" documentation of fully trained and experienced personnel shall be submitted to the VILLAGE prior to approval.
2. Refresher courses for NWCG levels are required annually. To maintain certification individuals need to have completed the S130/S190 courses (once), pass at least a moderate level pack test (carry forty-five (45) pounds three (3) miles in forty-five (45) minutes), and attend a yearly one-day refresher course. Documentation that certification maintenance training for all proposed burn crew members has been completed shall be submitted to the VILLAGE prior to approval. Refresher courses for other NWCG positions vary.
3. Burn plans shall be written/reviewed and approved by the burn boss.
4. The National Wildfire Coordinating Group (NWCG) standards shall be followed for prescribed fire.

#### C. EQUIPMENT

1. The Natural Areas Contractor shall have in their possession the following equipment prior to plan approval unless otherwise agreed upon by the VILLAGE:
  - a. Two type 6 engines
  - b. Two type 7, 6 wheel drive ATV engines
  - c. One 500 gallon water tender
  - d. One fire pump capable of delivering sufficient water pressure at 1000 feet to suppress an

escaped fire

- e. 1000 feet of collapsible 1" fire hose with nozzles
- f. Two-way radios for all personnel involved in the fire, whether on the line or not (one [1] additional radio may be required for VILLAGE personnel to monitor activity)
- g. All necessary personal protective equipment for all personnel to meet NWCG guidelines.

#### D. INSURANCE

1. "A" insurance rating with coverage for at least \$5,000,000.00 (five million) dollars of general liability insurance and **excess general liability for "Prescribed Fire Operations" with a minimum \$2,000,000.00 (two million) per occurrence limit.**
2. The Natural Areas Contractor shall provide the Village with a certificate of insurance and name them as additional insured.
3. **The Natural Areas Contractor shall list prescribed fire on the certificate as the activity is covered.**

#### E. ROADSIDE VISIBILITY MATERIALS

1. Roadside visibility materials are essential if the fire is near a roadway. Natural Areas Contractor shall provide and install temporary warning signage along all roadways bordering the burn unit (Figure 4-19). Warning signage shall be visible by road traffic and shall display the Natural Areas Contractor's contact information. All signage on public roadways shall conform to all applicable local and Illinois DOT signage specifications.
2. Stop/Go paddle
3. Construction cones
4. All personnel participating in a prescribed fire within close proximity of a roadway shall wear appropriate reflective work vests.

#### F. BURN PLAN

1. Prior to burning, the Natural Areas Contractor shall complete and submit a burn plan for approval by the EPA, the VILLAGE and any other agencies with jurisdiction.
2. Because of the large degree of variation in the complexity of prescribed burns, there are no standardized burn plans, only standardized information. A burn plan can be short or long, depending on the complexity of the proposed burn and the desires of the ecologist/burn boss. At a minimum, the VILLAGE requires the following information be included in the burn plan:
  - a. The location of all smoke sensitive sites, including but not limited to schools, daycares, recreation centers, senior centers, and healthcare offices or facilities within one mile of the proposed burn site's perimeter shall be



Figure 4-17: Prescribed fire being executed by trained professionals with appropriate equipment



Figure 4-18: Only trained personnel with proper safety equipment can work on burn sites



Figure 4-19: Proper safety signage



documented on a site map.

#### G. PERMISSIONS/PERMITS

1. The Natural Areas Contractor shall gain permissions and permits from all applicable federal, state, county, and local agencies and government entities prior to burning.

#### H. PUBLIC NOTIFICATION

1. The Natural Areas Contractor shall notify adjacent neighbors in writing that a prescribed burn will be taking place and shall include an anticipated schedule. The notification must include the Contractor's phone number and an invitation to be added to a notification call list. Contractor will be responsible for notifying anyone on the notification call list 24 hours in advance of the burn.
2. The Natural Areas Contractor shall contact any identified smoke sensitive sites in writing and by phone at a minimum of two weeks prior to the scheduled burn and again 24 hours in advance of the burn.
3. The Natural Areas Contractor shall notify the VILLAGE 48 hours in advance of the burn.

#### I. EXECUTION

1. The prescribed fire shall be executed in accordance with an approved burn plan.

2. The prescribed fire shall achieve the goals as stated in the approved burn plan.
3. The Natural Areas Contractor shall mop up all burning material to 100% black after the main fire has passed. There shall be no burning materials when the Natural Areas Contractor leaves the site.
4. The Natural Areas Contractor shall be available to return to the site within 2 hours following mop up operations to extinguish burning materials. The person selected to return to the site must have access to all crew members in the event that they must be re-deployed to the project site.



Figure 5-20: Burn platforms are often utilized to protect native herbaceous material that may be dormant but still present



Figure 5-21: Example of fire exclusion



SECTION

# 5

## PERFORMANCE CRITERIA & MONITORING

Measuring success of a native planting can prove difficult, however it is critical that we define what success looks like to ensure consistent, high-quality installations. In an effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the minimum baseline performance criteria and monitoring efforts that should be included in all native planting plans and specifications.



### 5.01 Performance and VILLAGE Acceptance

Performance criteria, also known as performance standards, define whether or not a project has been successful in meeting certain goals or the project's intent. The goals can be different for each project and may include creating habitat for wildlife, improving plant biodiversity, increasing stormwater holding capacity, decreasing nutrient loading into local water systems, or improving public space aesthetics. There is no perfect, one-size-fits-all system for measuring success in native planting establishment. In addition to traditional performance criteria based upon monitoring data, the VILLAGE also requires each Developer to meet the intent of this document as detailed below.

#### 5.01.01 Stated Intent within Native Planting Areas

- A. Brush and tree clearing priorities are to approach eradication of invasive woody species and thin existing stands of native woody species. The intent is to allow sunlight to penetrate the ground and eliminate threats from invasive species or aggressive native species, while protecting existing trees to remain from damage.
- B. Native planting priorities are to prepare planting areas for good seed-to-soil contact, install an even coverage of high-quality native seed/plants, and protect planting areas from erosion. The intent is to develop a dense stand of native vegetation with minimal weed content.
- C. Native planting management priorities are to approach eradication of invasive and weedy species, establish and encourage the healthy growth of native species, and increase overall site biodiversity. This document describes the standards for acceptance, monitoring, reporting, performance, and remediation for a successful management program. The intent is to develop a dense stand of desirable native species with minimal weed content and no threat from invasive species or aggressive native species.
- D. Prescribed fire priorities are to achieve specific ecological and/or aesthetic outcomes through the safe application of fire under a comprehensive prescription without causing damage to structures, property, cultural resources, desirable woody vegetation, desirable deadwood, desirable fire-negative herbaceous species, or other desirable features. The intent is to clear standing dormant herbaceous biomass and/or leaf litter so that sunlight can penetrate to the soil surface and that other management tasks can be performed more efficiently.

#### 5.01.02 Performance Criteria

- A. At no time throughout management activities shall aggressive native species, non-native species, nor invasive/exotic species be allowed to become established on the site and/or be allowed to colonize. Here "establish" means that the species is allowed to grow, thrive, and reproduce.
- B. Within three (3) months of seed installation, the total vegetation cover in all areas seeded with cover crop shall be greater to or equal than seventy-five percent (75%) as measured by general visual assessment. If seed installation is completed in the fall, this standard shall be met by June 1<sup>st</sup> of the following year.
- C. Goals for the end of the first growing season
  1. Twenty-five percent (25%) of the native species installed via seed shall be alive and apparent.
  2. None of the dominant species within the seeded areas shall be invasive/exotic species (See Appendix D).
  3. No less than eighty percent (80%) of any live native herbaceous plant material installed shall be alive and in vigorous condition. If less than eighty percent (80%) of any live native herbaceous plant material installed survive the first full growing season, the plants shall be replaced so that the eighty percent (80%) criteria is achieved.
- D. Goal for the end of the second growing season, in addition to fulfilling the above:
  1. Fifty percent (50%) of the native species installed via seed shall be alive and apparent.
  2. Native cover within the seeded area(s) shall be at least fifty percent (50%), but shall not be dominated with aggressive native species including, but not limited to Ragweed (*Artemisia spp.*), Horsetail (*Erigeron canadensis*), Foxtail (*Alopecurus spp.* & *Setaria spp.*), Cottonwood (*Populus deltoids*), Box Elder (*Acer negundo*), Sandbar Willow (*Salix interior*), Cattails (*Typha spp.*), Barnyard Grass (*Echinochloa crusgalli*), etc.
- E. By the end of the third growing season, in addition to fulfilling the above:
  1. For each planting zone, seventy-five percent (75%) of the native species installed via seed shall be alive and apparent. None of the dominant species within the planting zone(s) shall be non-native or invasive/exotic species (See Appendix "A"). Native cover within the planting area(s) shall be at least eighty percent (80%), but shall not be dominated with aggressive native species including, but not limited to Ragweed (*Artemisia spp.*), Horsetail (*Erigeron canadensis*),

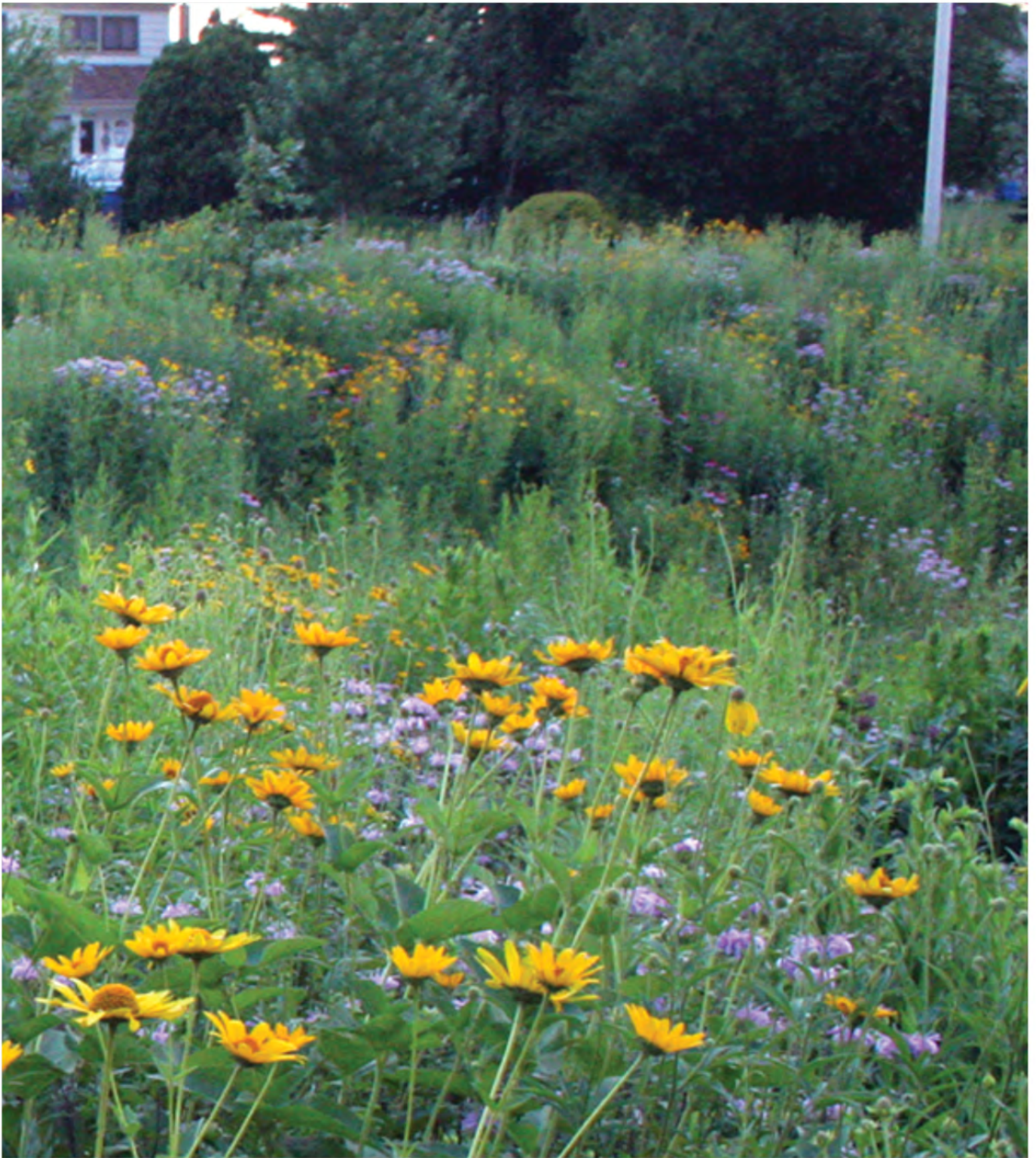


Figure 5-1: A healthy and functioning natural area with high diversity that meets performance criteria

Foxtail (*Alopecurus spp.* & *Setaria spp.*), Cottonwood (*Populus deltoids*), Box Elder (*Acer negundo*), Sandbar Willow (*Salix interior*), Cattails (*Typha spp.*), Barnyard Grass (*Echinochloa crusgalli*), etc.

2. There shall be no area(s) greater than 0.25 m<sup>2</sup> that are devoid of vegetation.
3. There shall be no rills or gullies present throughout the project area.
4. The following FQA standards shall be achieved:
  - a. Based on the results of the meander survey, the goal is to have the Native Mean C-value increase each successive year after planting.
  - b. Based on the meander survey, the goal is to have the Native FQI increase each successive year.
  - c. By the end of the third growing season, each planting zone shall achieve or exceed the following FQA values (See Figure 5-4 for standard mix performance criteria calculations):
    - i. Native FQI – 21.0
    - ii. Native Mean C Value – 3.5
    - iii. The Native Mean W within any wetland zone shall be less than zero.

5.01.03 FORMAL ACCEPTANCE CRITERIA

- A. At least five (5) days prior to the desired date of inspection, the Developer shall submit a written request for inspection to VILLAGE.
- B. Final Acceptance: The work shall be considered 100% complete after the year three performance criteria have been satisfied.

PERFORMANCE CRITERIA CALCULATIONS FOR STANDARD MIXES (APPENDIX A)				
Species List	Native FQI	Total FQI	Native Mean C Value	Total C Value
Buffalo Grass Lawn Seed Mix	0	0	0	0
Transitional Buffer Seed Mix (Dry-Mesic Soils)	5.7	3.4	4.0	1.8
Transitional Buffer Seed Mix (Mesic-Wet Soils)	7.5	4.5	3.8	1.7
Low Profile Prairie Seed Mix	37.6	22.6	6.0	2.7
Dry Bottom Detention Basin Seed Mix	31.3	18.8	4.8	2.2
Wetland Seed Mix	34.4	20.6	5.1	2.3
Emergent Seed Mix	28.5	17.1	5.5	2.5
Shoreline Plug Mix	30.2	18.1	5.9	2.7

Figure 5-2

## 5.02 Monitoring and Reporting

Natural areas monitoring is a helpful and necessary tool to track the progress of a native planting, restoration or the health of an established natural area. The results of monitoring can inform future management actions by providing information on native and invasive species presence and coverage, herbivory, erosion, hydrological, wildlife, or aesthetic issues. The VILLAGE has determined that the minimum criteria for monitoring and reporting regarding native planting projects are as detailed below.

- A. All native planting areas shall be monitored annually for a three-year period to ensure successful establishment of the plantings. The primary objective of the monitoring program is to track the success of the planted species over the 3-year period of regularly scheduled monitoring sessions. The monitoring documents changes in plant community composition and reveals the need for management changes to improve floristic quality. Specific goals of the monitoring are to determine the vegetative species present, the percent cover by vegetation, and to identify hydrological and erosion problems.
- B. Perform at least one (1) *qualitative* monitoring visit within the native planting areas. Monitoring may occur anytime during the months of May-September. Meander survey methods will be utilized to gather data required for reporting to the project stakeholders. Data gathered during monitoring activities shall include:
  1. Meander Survey Methodology (Figure 5-3)
    - a. Approximate total, native, and non-native/weedy vegetative coverage throughout each planting zone.
    - b. Produce plant inventories for the entire site and each planting zone if required. This data will be used to compile mean coefficients of conservatism values, Floristic Quality Indices (FQI), and mean wetness values.
    - c. Assess tree and shrub survival rates.
    - d. Take representative site photographs.
- C. Perform at least one (1) *quantitative* monitoring visit within the native planting areas. Monitoring may occur anytime during the months of May-September. Permanent transect and quadrat survey methods will be utilized to gather data required for determining final success criteria. Data gathered during monitoring activities shall include:
  1. Straight Line Transect Sampling (Figures 5-4 and 5-5)
    - a. Gather vegetative data from a series of quadrats located along permanent straight line transects resulting in 30 or



Figure 5-3: Meander survey example

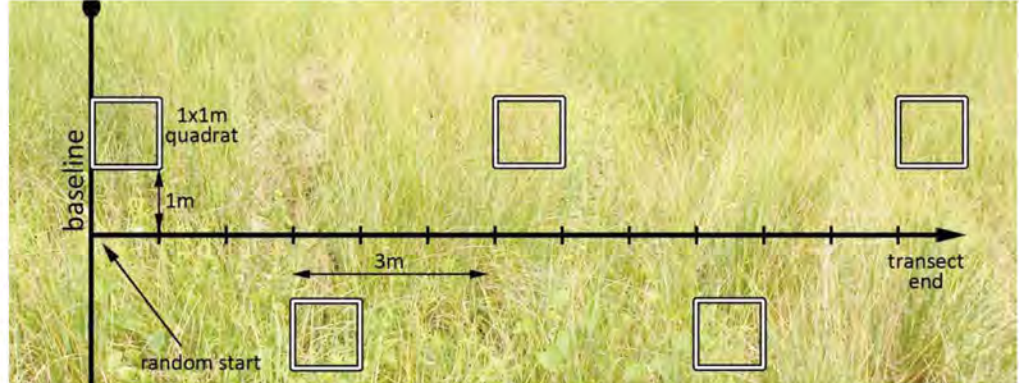


Figure 5-4: Diagram of straight line transect sampling



Figure 5-5: Individual performing a straight line transect study



- more quadrats per each planting zone or a maximum of 20% of the area planting zone.
  - b. Data collected shall be used to validate or dispute visual assessments of vegetative coverage and assessments of vegetative dominance, coverage and distribution.
  - c. This level of sampling and replication should be enough to overcome any uncontrollable environmental variation.
- D. Prepare one (1) annual monitoring report by March 31<sup>st</sup> of the following year. The annual monitoring report shall contain the following information:
1. Introduction
    - a. Site history leading up to the current project, including construction and management to date.
    - b. Site description, including a street address (if applicable), County, Section, Township, and Range.
    - c. A site location map.
    - d. Permit numbers and department/county of issue (if applicable).
  2. Vegetation Monitoring
    - a. Methods
      - i. Summarize the methods used for vegetation monitoring, including the survey dates.
    - b. Results
      - i. Summarize the results of the vegetation monitoring.
    - c. Provide Data Summaries, including:
      - i. Floristic Quality Assessment Data for the Baseline Meander Survey (if available)
      - ii. Floristic Quality Assessment Data for the Meander & Transect Survey:
        - o Native Mean Coefficient of Conservatism Value (Native Mean C Value)
        - o Native Floristic Quality Index (Native FQI)
        - o Relative Importance Value of all plant species (RIVn)
        - o A comparison table that lists previous years' data (if available) with current year's data as both compare with performance criteria.
        - o Live Plant Material:
          - Report on the condition of any native woody live plant material
  3. Discussion
    - a. Discuss the work performed as part of ongoing stewardship during the previous calendar year (if applicable).
    - b. Compare the current year's data with data from the previous years (if available).
    - c. Compare current year's results against the performance criteria.
    - d. Describe any deficiencies in the stewardship activities to date that are hindering the site's ability to meet the performance criteria and propose detailed corrective actions.
    - e. Discuss in detail the stewardship activities that are recommended in the upcoming year.
    - f. Conclusion
  4. Exhibits
    - a. Copies of any applicable permits.
    - b. Original site plan, including topography, planting zones, tree locations, etc.
    - c. Adapted site plan showing areas of deficiency, areas of erosion, etc.
    - d. Original species lists installed
    - e. Floristic Quality Assessment data tables

### 5.03 Remediation & Formal Acceptance

If native planting areas fail to meet the terms of the performance criteria, the Natural Areas Contractor should develop and submit a remedial action plan that takes into consideration the site goals and specific deficiencies. The contractor will implement the approved remedial action plan and submit a report that describes the remedial action taken. Final acceptance is not granted until all planting areas meet performance criteria or meet the stated intent of the project to the satisfaction of the VILLAGE. Even after formal acceptance, natural areas need to be maintained in perpetuity.





# NATIVE PLANTING GUIDELINE APPENDICES

- A: Native Seed and Plant Mixes**
- B: Contact Information for Local Professional Natural Areas Contractors**
- C: Contact Information for Regional Native Plant & Seed Suppliers**
- D: Invasive Species List**
- E: Submittal Checklist**
- F: Examples of Installations**
- G: Hydrograph Information**
- H: References & Additional Information**
- I: Glossary**



# NATIVE SEED AND PLANT MIXES

## Buffalo Grass Lawn Seed Mix (Dry - Mesic Soils)

MIX STATISTICS																		
<b>Base Mix Without Supplemental Plugs</b>																		
Average Mix Height	0.5'	<b>Mix Description:</b> Pizzo's Buffalo Grass Lawn Mix provides an alternative to traditional high-maintenance turf grass, such as Kentucky Bluegrass, Fescue, and Rye. While not thought to be locally native to the Chicago Region (it is known to be native to Southern Illinois and in the Western U.S.), Bowie is a cultivar that has the ability to survive colder northern climates. Unlike traditional high-maintenance turf grass, Buffalo Grass is a slow grower with a maximum height of 4-8" requiring little or no mowing and less than 1" of water per week. It prefers full sun, however it will survive in partial or dappled shade conditions. Buffalo Grass is a warm-season grass, which means it will go dormant (turns golden brown) in the fall and takes approximately a month longer to green-up in the spring when compared to traditional turf grass. Seeding of this mix should <b>only</b> occur in late spring/early summer when the soil temperatures reach 60-70° (typically late May - early July).																
Median Mix Height	0.5'																	
Mix Height Mode (# of Occurrences in Mix)	0.5' (1)																	
Number of Native Species in Mix	1																	
Lbs/Acre of Native Seed	100.00																	
Protegeules per Square Foot	2115.70																	
Native FQI	0																	
Native Mean C Value	0																	
Native Mean W Value	4																	
National Wetland Category	Facultative - Equally likely to occur in wetlands or uplands (estimated 34% - 66% probability)																	
<b>Grasses, Sedges, &amp; Rushes (Monocots)</b>																		
ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
BUCDAC	<i>Buchloe dactyloides</i> BOWIE	BOWIE BUFFALO GRASS	0	4	FUPL-	4-8" (5")	N/A							57,600	1600.0000	100.00	100.00%	100.00%
<b>Monocot Subtotals</b>																100.00	100.00%	100.00%
<b>Dicot Subtotals</b>																0.00	0.00%	0.00%
<b>BASE MIX TOTALS</b>																100.00	100.00%	100.00%

**Notes:**  
 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre  
 2.) Prepare soil seedbed the same as for traditional turf seeding  
 3.) Apply starter fertilizer the same as for traditional turf seeding  
 4.) Because of the seeding timeframe, temporary irrigation should be provided until establishment  
 5.) \*\*At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop\*\*

## Transitional Buffer Seed Mix (Dry - Mesic Soils)

MIX STATISTICS																		
<b>Base Mix Without Supplemental Plugs</b>																		
Average Mix Height	1.46'	<b>Mix Description:</b> Pizzo's Transitional Buffer Mix is designed as a short-grass native planting that can be installed between low, flat areas (turf grass areas, sidewalks, etc.) and the taller, more diverse prairie areas. Providing this buffer achieves multiple things: 1.) Since some taller prairie species can "flop" and/or look "leggy" at the base, this short-grass buffer provides space so that taller plants will not flop onto the lawn or pavement, and it will also provide a visual screen to the lower, unattractive portion of the prairie; 2.) This buffer is easy to maintain with broadleaf herbicides, which gives a neat, "cared for" appearance that establishes a defined edge to the prairie; and 3.) Provides an all-grass buffer between lawn and prairie that will protect the broadleaf wildflowers in the prairie from annual "ween'n'feed" applications (which contain a broadleaf herbicide) to the lawn. The grasses in this mix are warm-season grasses, which means they will go dormant (turn golden brown) in the fall. Seeding of this mix should only occur in spring (typically before June 15th).																
Median Mix Height	0/0																	
Mix Height Mode (# of Occurrences in Mix)	2.5' (1), 0.5' (1)																	
Number of Native Species in Mix	2																	
Lbs/Acre of Native Seed	62.00																	
Protegeules per Square Foot	174.55																	
Native FQI	5.7																	
Native Mean C Value	4																	
Native Mean W Value	4.5																	
National Wetland Category	Obligate Upland - Occurs almost never in wetlands under natural conditions (estimated <1% probability)																	
<b>Grasses, Sedges, &amp; Rushes (Monocots)</b>																		
ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
BOUCUR	<i>Bouteloua curtipendula</i>	SIDE-OATS GRAMA	8	5	UPL	2-3' (2.5')	N/A							6,000	960.0000	60.00	96.77%	75.76%
BUCDAC	<i>Buchloe dactyloides</i> BOWIE	BOWIE BUFFALO GRASS	0	4	FUPL-	6-8" (5")	N/A							57,600	32.0000	2.00	3.23%	24.24%
<b>Monocot Subtotals</b>																62.00	100.00%	100.00%
<b>Dicot Subtotals</b>																0.00	0.00%	0.00%
<b>BASE MIX TOTALS</b>																62.00	100.00%	100.00%

## Transitional Buffer Seed Mix (Mesic-Wet Soils)

MIX STATISTICS																		
<b>Base Mix Without Supplemental Plugs</b>																		
Average Mix Height	2.23'	<b>Mix Description:</b> Pizzo's Transitional Buffer Mix is designed as a short-grass native planting that can be installed between low, flat areas (turf grass areas, sidewalks, etc.) and the taller, more diverse prairie areas. Providing this buffer achieves multiple things: 1.) Since some taller prairie species can "flop" and/or look "leggy" at the base, this short-grass buffer provides space so that taller plants will not flop onto the lawn or pavement, and it will also provide a visual screen to the lower, unattractive portion of the prairie; 2.) This buffer is easy to maintain with broadleaf herbicides, which gives a neat, "cared for" appearance that establishes a defined edge to the prairie; and 3.) Provides an all-grass buffer between lawn and prairie that will protect the broadleaf wildflowers in the prairie from annual "ween'n'feed" applications (which contain a broadleaf herbicide) to the lawn. The grasses in this mix are warm-season grasses, which means they will go dormant (turn golden brown) in the fall. Seeding of this mix should <b>only</b> occur in spring (typically before June 15th).																
Median Mix Height	3.00'																	
Mix Height Mode (# of Occurrences in Mix)	3' (2), 2.5' (1), 0.5' (1)																	
Number of Native Species in Mix	4																	
Lbs/Acre of Native Seed	38.00																	
Protegeules per Square Foot	222.30																	
Native FQI	7.5																	
Native Mean C Value	3.8																	
Native Mean W Value	2																	
National Wetland Category	Facultative (+) - Equally likely to occur in wetlands or uplands (estimated 34% - 66% probability). The "+" sign denotes that this mix generally has a lesser estimated probability of occurring in wetlands than the "Facultative Wetland" general indicator, but a greater estimated probability of occurring in wetlands than a mix having the "Facultative" general indicator.																	
<b>Grasses, Sedges, &amp; Rushes (Monocots)</b>																		
ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
ANDSCO	<i>Andropogon scoparius</i>	LITTLE BLUESTEM GRASS	5	4	FACU-	2-3' (3)	N/A							15,000	320.0000	20.00	52.63%	49.57%
BOUCUR	<i>Bouteloua curtipendula</i>	SIDE-OATS GRAMA	8	5	UPL	2-3' (2.5')	N/A							6,000	240.0000	15.00	39.47%	14.87%
BUCDAC	<i>Buchloe dactyloides</i> BOWIE	BOWIE BUFFALO GRASS	0	4	FUPL-	6-8" (5")	N/A							57,600	32.0000	2.00	5.26%	19.04%
CVVULP	<i>Carex vulpinoidea</i>	BROWN FOX SEDGE	2	-5	OBL	2-4' (3)	N/A							100,000	16.0000	1.00	2.63%	16.52%
<b>Monocot Subtotals</b>																38.00	100.00%	100.00%
<b>Dicot Subtotals</b>																0.00	0.00%	0.00%
<b>BASE MIX TOTALS</b>																38.00	100.00%	100.00%

**Notes:**  
 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre  
 2.) For spring planting, Pizzo recommends installing a cover crop of Seed Oats (*Avena sativa*) with the above seed mix at 40 lbs/acre  
 3.) For fall planting, Pizzo recommends install a cover crop of ReGreen (a Winter Wheat x Wheatgrass Sterile Hybrid) with the above mix at 50 lbs/acre  
 4.) \*\*At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop\*\*







# APPENDIX A - NATIVE SEED AND PLANT MIXES

## Emergent Seed Mix (2-6" Water Depth)

MIX STATISTICS	
<b>Base Mix Without Supplemental Plugs</b>	
Average Mix Height	3.22'
Medium Mix Height	3.00'
Mix Height Mode (# of Occurrences in Mix)	3.0' (12), 2.0' (6), 4.0' (4), 5.0' (3), 5.5' (1), 2.5' (1)
Number of Native Species in Mix	27
Lbs/Acre of Native Seed	6.36
Propagules per Square Foot	228.92
Native PFI	-28.5
Native Mean C Value	-5.5
Native Mean W Value	-5.0
National Wetland Category	Obligate Wetland - Occurs almost always in wetlands under natural conditions (estimated >99% probability)

**Mix Description:** Pizzo's Emergent Seed Mix is designed to grow in shallow water 2" to 6" deep. It is ideal for shallow water wetlands and within the emergent zone of a pond or stream shoreline. Over 73% of the seeds in this mix are Sedge or Sedge-like species. To complement this dark green aesthetic over 26% of the mix composed of wildflowers, which provide an array of blooms from May through October. This emergent mix will result in a medium-tall profile with under 44% of seeds typically averaging 3.0' high or less and over 20% of seeds typically averaging 5.0' high or more at maturity. To achieve appropriate seed-to-soil contact for germination this mix must be planted prior to establishing normal water levels, or the water body must be drained in order to expose the soil within the targeted seeding area prior to seeding. We recommend installing appropriate temporary erosion control blanket over areas seeded with this mix. The Emergent seed mix can be supplemented with the recommended plug list provided below to add diversity, color, and resilience to the long-term health of your wetland.

### Grasses, Sedges, & Rushes (Monocots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
CRCOMO	<i>Carex comosa</i>	BRISTLY SEDGE	5	-5	OBL	1-3' (2')	N/A							30,000	6,000	0.38	5.90%	1.80%
CRIHST	<i>Carex hystericina</i>	PORCUPINE SEDGE	5	-5	OBL	2-4' (3')	N/A							30,000	2,000	0.13	1.97%	0.60%
CRLACU	<i>Carex lacustris</i>	COMMON LAKE SEDGE	6	-5	OBL	2-4' (3')	N/A							11,000	25,000	0.16	2.46%	0.28%
CRLURI	<i>Carex lurida</i>	BOTTLEBRUSH SEDGE	8	-5	OBL	2-4' (3')	N/A							12,000	2,000	0.13	1.97%	0.24%
CXSTRI	<i>Carex stricta</i>	COMMON TUSsock SEDGE	5	-5	OBL	2-4' (3')	N/A							53,000	1,000	0.06	0.98%	0.53%
CXVULP	<i>Carex vulpinoidea</i>	BROWN FOX SEDGE	2	-5	OBL	2-4' (3')	N/A							100,000	4,000	0.25	3.93%	4.00%
ELEERY	<i>Eleocharis erythropoda</i>	RED-ROOTED SPIKE RUSH	2	-5	OBL	2-4' (3')	N/A							78,000	1,000	0.06	0.98%	0.78%
JUNEFF	<i>Juncus effusus</i>	COMMON RUSH	7	-5	OBL	1-3' (2')	N/A							1,000,000	1,000	0.06	0.98%	10.00%
LEEORY	<i>Leersia oryzoides</i>	RICE CUT GRASS	4	-5	OBL	3-5' (4')	N/A							34,000	6,000	0.38	5.90%	2.04%
SGATR	<i>Scirpus atrovirens</i>	DARK GREEN RUSH	4	-5	OBL	3-6' (5')	N/A							460,000	4,000	0.25	3.93%	18.40%
SOCCYP	<i>Scirpus cyperinus</i>	WOOD GRASS	6	-5	OBL	3-5' (4')	N/A							1,700,000	2,000	0.13	1.97%	34.01%
SOVAC	<i>Scirpus validus creber</i>	GREAT BULRUSH	5	-5	OBL	4-7' (5.5')	N/A							31,000	40,000	0.25	3.93%	1.24%
<b>Monocot Subtotals</b>															<b>2.22</b>	<b>34.89%</b>	<b>73.92%</b>	

### Flowers & Other Broadleaves (Dicots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
ACOCAL	<i>Aconitum columbianum</i>	SWEET FLAG	7	-5	OBL	1-3' (2')	Green							6,900	12,000	0.75	11.73%	0.73%
ALISUB	<i>Alisma subcordatum</i>	COMMON WATER PLANTAIN	4	-5	OBL	1-3' (2')	White							60,000	4,000	0.25	3.93%	2.40%
ASQNC	<i>Asclepias incarnata</i>	SWAMP MILKWEED	4	-5	OBL	3-5' (4')	Magenta							4,800	4,000	0.25	3.93%	0.19%
BIDCER	<i>Bidens cernua</i>	NODDING BUR MARI GOLD	5	-5	OBL	2-4' (3')	Yellow							21,000	4,000	0.25	3.93%	0.84%
BIDCOR	<i>Bidens coronata</i>	TALL SWAMP MARI GOLD	3	-5	OBL	3-5' (4')	Yellow							6,500	20,000	0.13	1.97%	0.13%
EUPMAM	<i>Eupatorium maculatum</i>	SPOTTED JOE PYE WEED	4	-5	OBL	4-7' (5')	Pink							95,000	0,750	0.05	0.74%	0.71%
HIBLAE	<i>Hibiscus laevis</i>	HALBERD-LEAVED ROSE MALLOW	6	-5	OBL	3-6' (5')	Pink							2,800	35,000	0.22	3.44%	0.10%
IRIVIS	<i>Iris virginica shrevei</i>	BLUE FLAG	5	-5	OBL	2-4' (3')	Blue							1,000	14,000	0.08	13.76%	0.14%
LUDALT	<i>Ludwigia alternifolia</i>	SEEDBOX	6	-5	OBL	2-4' (3')	Yellow							1,300,000	0.125	0.01	0.12%	1.63%
LTCAME	<i>Lycopus americanus</i>	COMMON WATER HOREHOUND	5	-5	OBL	1-3' (2')	White							130,000	0,250	0.02	0.25%	0.33%
LYTALA	<i>Lythrum alatum</i>	WINGED LOOSESTRIFE	7	-5	OBL	2-4' (3')	Purple							3,000,000	0.125	0.01	0.12%	3.75%
MIMIRIN	<i>Mimulus ringens</i>	MONKEY FLOWER	6	-5	OBL	2-4' (2.5')	Purple							2,300,000	0.500	0.03	0.49%	11.50%
PONCOR	<i>Pontederia cordata</i>	PICKEREL WEED	10	-5	OBL	1-3' (2')	Purple							1,250	16,000	1.00	15.72%	0.20%
SAGLAT	<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	4	-5	OBL	2-4' (3')	White							61,000	4,000	0.25	3.93%	2.44%
SCLRID	<i>Scirpoidia adalidii</i>	RIDGELL'S GOLDENROD	7	-5	OBL	2-4' (3')	Yellow							93,000	1,000	0.06	0.98%	0.93%
<b>Dicot Subtotals</b>															<b>4.14</b>	<b>65.11%</b>	<b>26.08%</b>	
<b>BASE MIX TOTALS</b>															<b>6.36</b>	<b>100.00%</b>	<b>100.00%</b>	

### Recommended Plug Species to Supplement Emergent Seed Mix

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						PLUGS/FLAT	FLATS/ACRE	PLUGS/ACRE	PLUGS/SF	% OF MIX by Seed Count
								A	M	J	J	A	S					
CXEMOR	<i>Carex amara</i>	RIVERBANK SEDGE (5)	6	-5	OBL	2-4' (3')	N/A							38	430	1,634.00	0.04	0.02%
LOBCAR	<i>Lobelia cardinalis</i>	CARDINAL FLOWER (1, 2, 4)	7	-5	OBL	3-5' (4')	Red							38	430	1,634.00	0.04	0.02%
PELVIR	<i>Peltandra virginica</i>	ARROW ARUM (2, 3)	10	-5	OBL	2-5' (4')	Green							38	86.0	3,268.00	0.08	0.03%
SPEAUR	<i>Sparganium eurycarpum</i>	COMMON BUR REED (1)	6	-5	OBL	3-5' (4')	White							38	86.0	3,268.00	0.08	0.03%
<b>Subtotals</b>															<b>258.0</b>	<b>9,804.00</b>	<b>0.23</b>	<b>0.10%</b>

### SUPPLEMENTED MIX STATISTICS

Base Seed Mix Including Supplemental Plugs	
Number of Native Species in Mix	31
Native PFI	31.6
Native Mean C Value	-5.7
Native Mean W Value	-5.0
National Wetland Category	Obligate Wetland - Occurs almost always in wetlands under natural conditions (estimated >99% probability)

Some species are not appropriate for inclusion into a seed mix, however they may be very desirable to have as part of the permanent plant matter because of their ecological, habitat, and/or aesthetic value. The plug species listed above are appropriate for supplementing this seed mix. Following are the common reasons for not including these species within the seed mix: 1-Does not germinate well from seed in the field, 2-Seed is very expensive, 3-Low number of seeds per ounce, 4-Requires specialized microclimate, 5-Seed is not commercially available or is only available in small quantities

- Notes:**
- 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre
  - 2.) For spring planting, Pizzo recommends installing a cover crop of Seed Oats (*Avena sativa*) with the above seed mix at 40 lbs/acre
  - 3.) For fall planting, Pizzo recommends installing a cover crop of ReGreen (a Winter Wheat x Wheatgrass Sterile Hybrid) with the above mix at 50 lbs/acre
  - 4.) \*\*At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop\*\*

# APPENDIX A - NATIVE SEED AND PLANT MIXES

## Shoreline Plug Mix

### MIX STATISTICS

#### Base Mix Without Supplemental Plugs

Average Mix Height	3.35'
Median Mix Height	3.00'
Mix Height Mode (# of Occurrences in Mix)	3' (11), 4' (6), 5.5' (4), 2' (4), 5' (3), 1.5' (1)
Number of Native Species in Mix	26
Native FQI	30.2
Native Mean C-Value	5.9
Native Mean W-Value	-4.7

**Mix Description:** Designed for shoreline applications from normal water level (NWL) to 6" water depth.

National Wetland Category: Obligate Wetland - Occurs almost always in wetlands under natural conditions (estimated >99% probability)

### Grasses, Sedges, & Rushes (Monocots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						Unit(s)	Size	
								A	M	J	J	A	S			O
COOMO	<i>Carex comosa</i>	BRISTLY SEDGE	5	-5	OBL	1-3' (2')	N/A								each	2" potted
COEMOR	<i>Carex ornoryi</i>	RIVERBANK SEDGE	6	-5	OBL	2-4' (3')	N/A								each	2" potted
COHYST	<i>Carex hystericina</i>	PORCUPINE SEDGE	5	-5	OBL	2-4' (3')	N/A								each	2" potted
COACU	<i>Carex lacustris</i>	COMMON LAKE SEDGE	6	-5	OBL	2-4' (3')	N/A								each	2" potted
COLUPN	<i>Carex lupulina</i>	COMMON HOP SEDGE	7	-5	OBL	2-4' (3')	N/A								each	2" potted
COLURI	<i>Carex lurida</i>	BOTTLEBRUSH SEDGE	8	-5	OBL	2-4' (3')	N/A								each	2" potted
COXTRI	<i>Carex stricta</i>	COMMON TUSsock SEDGE	5	-5	OBL	2-4' (3')	N/A								each	2" potted
COVULP	<i>Carex vulpinoidea</i>	BROWN FOX SEDGE	2	-5	OBL	2-4' (3')	N/A								each	2" potted
COATR	<i>Scirpus atrovirens</i>	DARK GREEN RUSH	4	-5	OBL	3-6' (5')	N/A								each	2" potted
COQYP	<i>Scirpus cyperinus</i>	WOOL GRASS	6	-5	OBL	3-5' (4')	S								each	2" potted
COQVAC	<i>Scirpus validus creber</i>	GREAT BULRUSH	5	-5	OBL	4-7' (5.5')	N/A								each	2" potted

### Flowers & Other Broadleaves (Dicots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						Unit(s)	Size	
								A	M	J	J	A	S			O
ACCCAL	<i>Acorus calamus</i>	SWEET FLAG	7	-5	OBL	1-3' (2')	Green								each	2" potted
AUISUB	<i>Alisma subcordatum</i>	COMMON WATER PLANTAIN	4	-5	OBL	1-3' (2')	White								each	2" potted
ASQINC	<i>Asclepias incarnata</i>	SWAMP MILKWEED	4	-5	OBL	3-5' (4')	Magenta								each	2" potted
EUPMAM	<i>Eupatorium maculatum</i>	SPOTTED JOE PYE WEEED	4	-5	OBL	4-7' (5')	Pink								each	2" potted
HBLAE	<i>Hibiscus laevis</i>	HALBERD-LEAVED ROSE MALLOW	6	-5	OBL	3-6' (5')	Pink								each	2" potted
IRIVIS	<i>Iris virginica shrevei</i>	BLUE FLAG	5	-5	OBL	2-4' (3')	Blue								each	2" potted
LIASPI	<i>Liatris spicata</i>	MARSH BLAZING STAR	6	0	FAC	3-5' (4')	Purple								each	2" potted
LOBCAR	<i>Labellia cardinalis</i>	CARDINAL FLOWER	7	-5	OBL	3-5' (4')	Red								each	2" potted
LYTALA	<i>Lythrum alatum</i>	WINGED LOOSESTRIFE	7	-5	OBL	2-4' (3')	Purple								each	2" potted
ONQSEN	<i>Onoclea sensibilis</i>	SENSITIVE FERN	8	-8	FACW	1-2' (1.5')	N/A								each	2" potted
PELVIR	<i>Peltandra virginica</i>	ARROW ARUM	10	-5	OBL	2-5' (4')	Green								each	2" potted
PONCOR	<i>Pontederia cordata</i>	PICKEREL WEEED	10	-5	OBL	1-3' (2')	Purple								each	2" potted
SAGLAT	<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	4	-5	OBL	2-4' (3')	White								each	2" potted
SOLRID	<i>Solidago riddelli</i>	RIDDELL'S GOLDENROD	7	-5	OBL	2-4' (3')	Yellow								each	2" potted
SPAEUR	<i>Sparganium eurycarpum</i>	COMMON BUR REED	6	-5	OBL	3-5' (4')	White								each	2" potted

### Notes:

- 1) At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop
- 2) At no time should Creeping Bent Grass (*Agrostis palustris*) be used as a cover crop



# LOCAL NATURAL AREA CONTRACTORS

Pizzo Group, Leland, IL  
Phone: (815) 495-2300

Encap, Inc., DeKalb, IL  
Phone: (815) 748-4500

Tallgrass Restoration  
Phone: (847) 925-9830

Applied Ecological Services, West Dundee, IL  
Phone: (847) 844-9385

Conservation Land Stewardship, LLC, Elmhurst, IL  
Phone: (630) 559-2035

Cardno JF New, Walkerton, IN  
Phone: (574) 586-3400

Natural Resources Management, Beecher, IL  
Phone: (708) 935-2100

Integrated Lakes Management, Waukegan IL  
Phone: (847) 244-6662



# NATIVE PLANT & SEED SUPPLIERS

## Native Seed

Agrecol, Inc., Evansville, WI  
Phone: (608) 223-3571

Feder's Prairie Seed Company, Blue Earth, MN  
Phone: (507) 526-3049

Ion Exchange, Harpers Ferry, IA  
Phone: (563) 535-7231

Prairie Moon Nursery, Winona, MN  
Phone: (507) 452-1362

Shooting Star Native Seeds, Spring Grove, MN  
Phone: (507) 498-3944

Spence Restoration Nursery, Muncie, IN  
Phone: (765) 286-7154

## Native Plugs

Agrecol, Inc., Evansville, WI  
Phone: (608) 223-3571

Genesis Nursery, Inc., Tampico, IL  
Phone: (877) 817-5325

J&J Transplant Aquatic Nursery, LLC, Wild Rose, WI  
Phone: (800) 622-5055

Midwest Natural Garden, St. Charles, IL  
Phone: (847) 742-1792

Spence Restoration Nursery, Muncie, IN  
Phone: (765) 286-7154

Pizzo Native Plant Nursery, LLC, Leland, IL  
Phone: (815) 495-2300

## Native Trees & Shrubs

Bailey Nurseries, Inc., St. Paul, MN  
Phone: (708) 935-5974

Forrest Keeling Nursery, Elsberry, MO  
Phone: (573) 898-5571

Kankakee Nursery Co., St. Anne, IL  
Phone: (815) 937-9358

Possibility Place Nursery, Monee, IL  
Phone: (708) 534-3988





# INVASIVE SPECIES LIST

It is the responsibility of the Natural Areas Contractor to locate, identify, and eradicate any species that may endanger the successful establishment and long-term health of the specified native plant communities within the project area/site. Following is a list of common invasive, weedy and aggressive native species typically encountered during ecological restoration efforts that can inhibit the successful establishment of desirable native species. This list is not representative of the site and should not be considered an inventory. The listed species shall at no time be allowed to dominate any portion of the project site.

## Aggressive Weed/Invasive Species List:

<i>Acer negundo</i>	BOXELDER <sup>3</sup>	<i>Elaeagnus umbellata</i>	AUTUMN OLIVE <sup>1</sup>
<i>Acer platanoides</i>	NORWAY MAPLE	<i>Elymus repens</i>	QUACKGRASS
<i>Achillea</i> spp.	YARROW <sup>3</sup>	<i>Erigeron canadensis</i>	MARE'S TAIL <sup>3</sup>
<i>Aegopodium podagraria</i>	GOUTWEED	<i>Erigeron annuus</i>	ANNUAL FLEABANE <sup>3</sup>
<i>Agrostis gigantea</i>	REDTOP	<i>Erigeron strigosus</i>	DAISY FLEABANE <sup>3</sup>
<i>Agrostis stolonifera</i>	CREEPING BENTGRASS	<i>Euonymus alatus</i>	BURNING BUSH
<i>Ailanthus altissima</i>	TREE OF HEAVEN	<i>Euonymus fortunei</i>	WINTERCREEPER
<i>Alliaria petiolata</i>	GARLIC MUSTARD	<i>Euphorbia esula</i>	LEAFY SPURGE
<i>Alnus glutinosa</i>	EUROPEAN BLACK ALDER	<i>Fallopia japonica</i>	JAPANESE KNOTWEED <sup>1</sup>
<i>Ambrosia artemisiifolia</i>	COMMON RAGWEED <sup>1, 3</sup>	<i>Fallopia sachalinensis</i>	GIANT KNOTWEED <sup>1</sup>
<i>Ambrosia trifida</i>	GIANT RAGWEED <sup>1, 3</sup>	<i>Fallopia × bohemica</i>	BOHEMIAN KNOTWEED <sup>1</sup>
<i>Anthriscus sylvestris</i>	WILD CHERVIL	<i>Frangula alnus</i>	GLOSSY BUCKTHORN
<i>Arctium minus</i>	COMMON BURDOCK	<i>Hedera helix</i>	ENGLISH IVY
<i>Berberis thunbergii</i>	JAPANESE BARBERRY	<i>Hemerocallis fulva</i>	ORANGE DAYLILY
<i>Brassica nigra</i>	BLACK MUSTARD	<i>Heracleum mantegazzianum</i>	GIANT HOGWEED <sup>1</sup>
<i>Bromus inermis</i>	SMOOTH BROME	<i>Hesperis matronalis</i>	DAMES ROCKET
<i>Bromus tectorum</i>	DOWNY BROME	<i>Humulus japonicus</i>	JAPANESE HOPS
<i>Butomus umbellatus</i>	FLOWERING RUSH	<i>Hydrilla verticillata</i>	HYDRILLA
<i>Cannabis sativa</i>	MARIJUANA <sup>1</sup>	<i>Hydrocharis morsus-ranae</i>	EUROPEAN FROGBIT
<i>Carduus nutans</i>	MUSK THISTLE <sup>1</sup>	<i>Hypericum perforatum</i>	COMMON ST. JOHN'S WORT
<i>Celastrus orbiculatus</i>	ASIAN BITTERSWEET <sup>1</sup>	<i>Ipomoea purpurea</i>	MORNING GLORY <sup>2</sup>
<i>Centaurea maculosa</i>	SPOTTED KNAPWEED	<i>Iris pseudacorus</i>	YELLOW IRIS
<i>Chenopodium album</i>	LAMB'S QUARTERS <sup>2</sup>	<i>Lespedeza cuneata</i>	SERICEA LESPEDEZA
<i>Cirsium arvense</i>	CANADA THISTLE <sup>1</sup>	<i>Ligustrum</i> spp. (non-native)	PRIVET (non-native)
<i>Cirsium vulgare</i>	BULL THISTLE	<i>Lolium multiflorum</i>	ANNUALRYE/ITALIAN RYEGRASS
<i>Conium maculatum</i>	POISON HEMLOCK <sup>1</sup>	<i>Lonicera</i> spp.	HONEYSUCKLE (non-native) <sup>1</sup>
<i>Cornus racemosa</i>	GRAY DOGWOOD <sup>3</sup>	<i>Lotus corniculatus</i>	BIRDS FOOT TREFOIL
<i>Cynanchum louiseae</i>	BLACK SWALLOW-WORT	<i>Lysimachia nummularia</i>	MONEYWORT
<i>Cynanchum rossicum</i>	PALE SWALLOW-WORT	<i>Lythrum salicaria</i>	PURPLE LOOSESTRIFE
<i>Cyperus esculentus</i>	YELLOW NUTSEDGE <sup>3</sup>	<i>Marsilea quadrifolia</i>	EUROPEAN WATERCLOVER
<i>Dactylis glomerata</i>	ORCHARDGRASS	<i>Medicago lupulina</i>	BLACK MEDIC
<i>Daucus carota</i>	QUEEN ANNE'S LACE <sup>2</sup>	<i>Medicago sativa</i>	ALFALFA
<i>Dioscorea oppositifolia</i>	CHINESE YAM	<i>Melilotus albus</i>	WHITE SWEET CLOVER
<i>Dipsacus</i> spp.	TEASEL <sup>1</sup>	<i>Melilotus officinalis</i>	YELLOW SWEET CLOVER
<i>Echinochloa crus-galli</i>	BARNYARD GRASS	<i>Microstegium vimineum</i>	JAPANESE STILTGRASS
<i>Egeria densa</i>	BRAZILIAN WATERWEED	<i>Morus alba</i>	WHITE MULBERRY
<i>Eichhornia crassipes</i>	WATER HYACINTH	<i>Myosotis sylvatica</i>	GARDEN FORGET-ME-NOT
<i>Elaeagnus angustifolia</i>	RUSSIAN OLIVE <sup>1</sup>	<i>Myriophyllum aquaticum</i>	PARROT FEATHER
<i>Elaeagnus pungens</i>	THORNY OLIVE <sup>1</sup>	<i>Myriophyllum spicatum</i>	EURASIAN WATERMILFOIL

# INVASIVE SPECIES LIST, CONTD.

<i>Myosotis scorpioides</i>	WATER FORGET-ME-NOT	<i>Typha angustifolia</i>	NARROWLEAF CATTAIL <sup>3</sup>
<i>Najas minor</i>	BRITTLE WATERNYMPH	<i>Typha latifolia</i>	COMMON CATTAIL <sup>1,3</sup>
<i>Nepeta cataria</i>	CATNIP	<i>Ulmus pumila</i>	SIBERIAN ELM
<i>Nymphoides peltata</i>	YELLOW FLOATING HEART	<i>Verbascum blattaria</i>	MOTH MULLEIN <sup>2</sup>
<i>Oenothera biennis</i>	EVENING PRIMROSE <sup>3</sup>	<i>Verbascum thapsus</i>	COMMON MULLEIN <sup>2</sup>
<i>Onopordum acanthium</i>	SCOTCH THISTLE	<i>Vinca minor</i>	PERIWINKLE
<i>Pastinaca sativa</i>	WILD PARSNIP	<i>Xanthium strumarium</i>	ROUGH COCKLEBUR
<i>Phalaris arundinacea</i>	REED CANARY GRASS		
<i>Phragmites australis</i> (non-native)	COMMON REED (non-native)		
<i>Pistia stratiotes</i>	WATER LETTUCE		
<i>Poa pratensis</i>	KENTUCKY BLUEGRASS		
<i>Populus alba</i>	WHITE POPLAR		
<i>Populus deltoides</i>	COTTONWOOD <sup>3</sup>		
<i>Potamogeton crispus</i>	CURLY-LEAF PONDWEED		
<i>Pueraria montana</i> var. <i>lobata</i>	KUDZU <sup>1</sup>		
<i>Ranunculus ficaria</i>	LESSER CELANDINE <sup>1</sup>		
<i>Rhamnus cathartica</i>	COMMON BUCKTHORN		
<i>Robinia pseudoacacia</i>	BLACK LOCUST		
<i>Rorippa nasturtium</i>	WATERCRESS		
<i>Rumex acetosella</i>	SHEEP SORREL		
<i>Rumex crispus</i>	CURLY DOCK		
<i>Rosa multiflora</i>	MULTIFLORA ROSE		
<i>Rubus</i> spp.	RASPBERRY/BLACKBERRY <sup>3</sup>		
<i>Salix interior</i>	SANDBAR WILLOW <sup>3</sup>		
<i>Saponaria officinalis</i>	BOUNCING BET		
<i>Schedonorus arundinaceus</i>	TALL FESCUE		
<i>Securigaria varia</i>	CROWN VETCH		
<i>Setaria</i> spp.	FOXTAIL/MILLET <sup>2</sup>		
<i>Silene latifolia</i> var. <i>alba</i>	BLADDER CAMPION		
<i>Solidago altissima</i>	TALL GOLDENROD <sup>3</sup>		
<i>Solidago canadensis</i>	CANADA GOLDENROD <sup>3</sup>		
<i>Solidago sempervirens</i>	SEASIDE GOLDENROD		
<i>Sonchus arvensis</i>	PERENNIAL SOWTHISTLE <sup>1</sup>		
<i>Sorghum alnum</i>	COLUMBUS GRASS <sup>1</sup>		
<i>Sorghum halepense</i>	JOHNSONGRASS <sup>1</sup>		
<i>Symphotrichum lateriflorum</i>	SIDE FLOWERING ASTER <sup>3</sup>		
<i>Symphotrichum pilosum</i>	HAIRY ASTER <sup>3</sup>		
<i>Tamarix</i> spp.	SALT CEDAR <sup>1</sup>		
<i>Tanacetum vulgare</i>	COMMON TANSY		
<i>Taraxacum officinalis</i>	COMMON DANDELION <sup>2</sup>		
<i>Thlaspi arvense</i>	FIELD PENNYCRESS <sup>2</sup>		
<i>Torilis japonica</i>	JAPANESE HEDGE PARSLEY		
<i>Toxicodendron radicans</i>	POISON IVY <sup>3</sup>		
<i>Trifolium pratense</i>	RED CLOVER <sup>2</sup>		
<i>Trifolium repens</i>	WHITE CLOVER <sup>2</sup>		

- 1 Species classified as a Noxious Weed in the State of Illinois as of the date of this document
- 2 Species considered common weeds requiring control, not specifically considered invasive
- 3 Species considered native (or questionably native) in the State of Illinois, but often has an aggressive growth behavior that may require control on a case-by-case basis



# SUBMITTAL CHECKLIST

## General Requirements

- Four complete bound sets of the intended construction plans which must include a complete sheet index and the original signature & seal of the professional designer, landscape architect, or engineer
- One set of specifications, if not included in the drawings themselves, stamped with the seal & signature of the professional designer, landscape architect, or engineer
- Completed and signed application forms xyz
- Brief description of the proposed project including the type of development, total parcel or site size, size of the area under development
- Provide estimated schedule of operation

## Cover Sheet

- Name of project
- Common address and legal description of the site where the development will take place
- Index of Sheets
- Location Map
- Name, telephone number, and address of owner/ developer
- Name(s), telephone number(s), and address(es) of landscape architecture, engineering and/or consulting firms
- List of utility companies with telephone numbers providing services for the site
- General construction notes (on this sheet or attached sheet)
- Site benchmark tied to USGS datum

## Site Plans

- Outboundary information including property lines, lot dimensions, and all pertinent recorded easements
- North arrow and graphic scale of at least one inch to 100 feet or less
- Legend
- Date of original preparation and any revisions
- Total acreage of site
- Adjacent parcel owner information
- Existing and proposed building structures and streets or alleys
- Size and location of existing trees
- Show the location of utilities on site

## Restoration Plans

- North arrow and graphic scale of at least one inch to 100 feet or less
- Legend
- Match lines and/or plan sheet key (if necessary)
- Property or boundary lines
- Location of all access and staging areas
- Existing and proposed structures, parking lots, driveways, sidewalks, pathways, trails, and other impervious areas on the site
- Delineation of any existing wetlands and wetland buffers on or within 100 feet of the site
- Size and location of proposed detention or retention basin(s) including high water level, normal water level, and open water elevations
- Size and location of existing trees and vegetation areas on the site
- Tree protection fencing for all trees over 24" to be protected on site located within construction zone
- Clearing and treatment areas and strategies including existing vegetation, trees, and/or shrubs to be removed and methods for removal (for example mechanical removal, hand cutting, herbicides etc.)
- Proposed plant schedule and species lists with scientific names, plant sizes, and quantities
- Location of all proposed plants and seeding areas
- Location of all proposed waterfowl enclosures on plan or described in specification
- Plant installation details

**Grading and Utility Plan checklists found on following page**

# SUBMITTAL CHECKLIST, CONTD.

## Grading and Utility Plans

- Delineated limits of any flood protection areas on the site
- Delineation of the pre-development and post-development regulatory floodplain and regulatory floodway
- Delineation of any existing wetlands and wetland buffers on or within 100 feet of the site
- Construction access to site
- Hauling routes
- Provide existing and proposed contours at 1 foot intervals of the entire site and 100 feet beyond the site
- Top of foundation, lowest floor, lowest entry elevation, and floodproofing elevations of all existing structures within 100 feet of the development area
- Show grading limits
- Estimated grading quantity
- Size and location of existing trees
- Existing stormwater facilities including pipes, field tile, culverts, and inlets on the entire site and 50 feet beyond the site
- Existing utilities including sanitary, storm, water main, or any other utilities that existing on the site
- Show all proposed improvements which includes but is not limited to:
  - Storm sewers
  - Sanitary sewers and laterals
  - Water lines, hydrants, valves, and meter settings
  - Streets
  - Street lights & street signs
  - Sidewalks and handicap ramps
- Information regarding the invert and rim elevations, pipe sizes, pipe lengths, and material types for all proposed improvements
- Size and location of proposed detention or retention basin(s) including high water level, normal water level, and open water elevations
- Siltation and erosion control and details
- Siltation basins and calculations
- Density of proposed fills
- Show any proposed retaining walls and construction details
- Note on plan to provide Village with copy of grading compaction test results



# EXAMPLES OF INSTALLATIONS



Existing Conditions - A retention basin "Green Retrofit". Planted in July 2004, notice there is nothing growing in the water.



One week after planting - Photo illustrates goose exclusion, erosion control blanket, shoreline plug planting, and aquatic plug planting (July 2004).



One year after planting - There is a mass establishment of native wildflowers and wetland vegetation even during drought (July 2005).

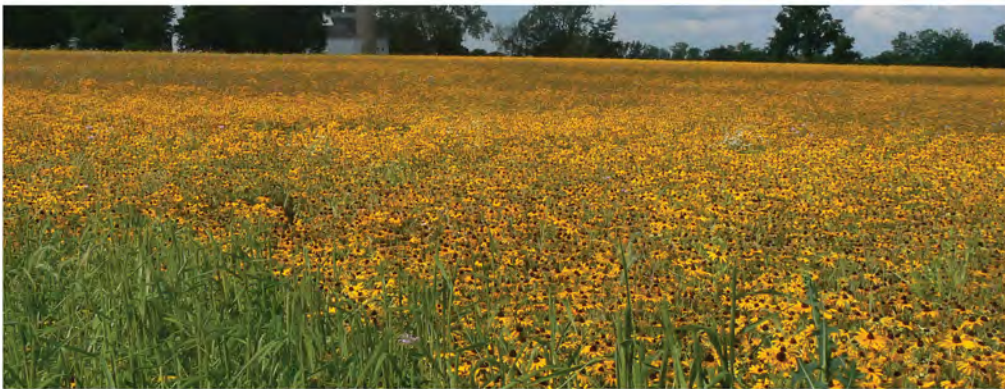


Two years after planting - There is a beautiful and functional wildflower and wetland planting that serves as habitat for local wildlife. The wetland plants cover the basin bottom and increase water quality (July 2006).

# EXAMPLES OF INSTALLATIONS



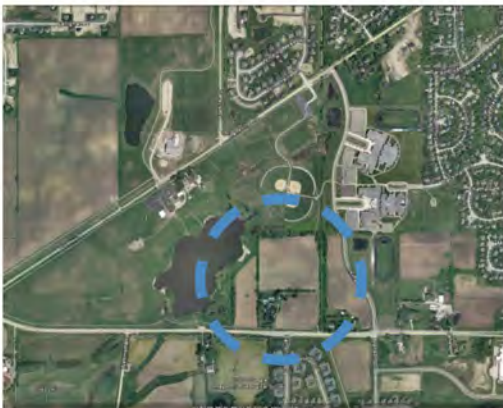
Existing Conditions - Agricultural Farm Field in Illinois (2008)



Two years after restoration - Black-eyed Susan in full bloom (July 2010).



Monarda & Ratibida in bloom after three years of stewardship after installation which included mowing and selective herbicide applications to control invasive species and promote the growth of native species. (July 2011).



Aerial photography showing the drastic difference and increased forb presence before and after restoration.

# HYDROGRAPH INFORMATION

## Storm Design Hydrographs

It is important to understand the basics of stormwater management design, because how a basin functions hydrologically directly affects the species selection, installation and management methodologies regarding native planting. First, in order to appropriately size a stormwater management system, the time of concentration (TOC) must be calculated for the basin. TOC is the time that it takes for drops of water to concentrate after falling on your site during a rain event and travel to the basin where it will be detained. Next, the total potential volume of water must be calculated. Typically the “100-year” storm event is used as a worst case scenario, this simply means that there is a 1 in 100 (or 1%) chance that a rainfall of this caliber will occur in a given year and is based off of historical rainfall data. TOC and water volume calculations are also typically figured for the smaller, more common rainfall events as well including the 50-year (2%), 25-year (4%), 10-year (10%), 5-year (20%) and 2-year (50%) storm events. Based upon TOC and water volume calculations, all basins, swales and pipes are designed to accommodate peak flows and water volume. The data produced can be displayed graphically in what is termed a Hydrograph (Figure 3-9). This graph shows a detention basin’s 100-year, 50-year, and 25-year peak water levels and duration of water presence. Figure 3-10 is the data for the 25-year storm event used to create the graph. The first column of the table is the amount of time that passes and the second is the water level. For example, during a 25-year storm event a basin might have zero inches of standing water after 15 minutes, but as the storm progresses more water will accumulate and the table will show an increase of volume (i.e. 0.75 feet of water may be present after 10 hours, 1.0 foot after 14 hours, etc.). Once the basin reaches its peak, the numbers will start to decline.

This information is critical when developing a planting plan for a basin or body of water. If it is known that a certain level of the basin will be inundated with water for long periods of time, it is best to choose plants that will thrive in saturated conditions. If the graph illustrates that the water will rarely reach a higher level and the plants will not be inundated, species that tolerate dry conditions should be specified. Thoughtful planting design and seed selection gives consideration to not only the colors and textures of the plants but also the conditions in which they can live and thrive.

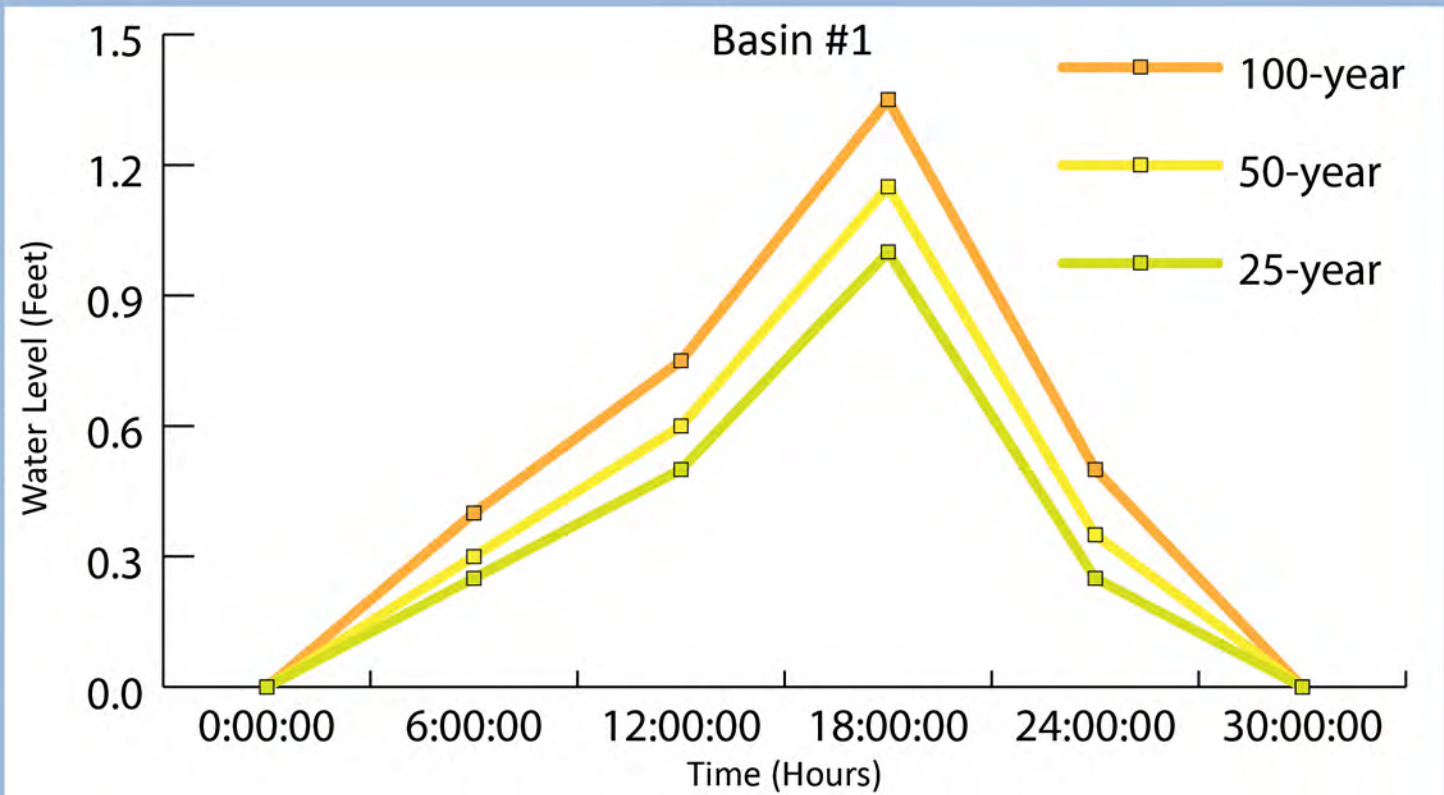


Figure G-1: Storm Hydrograph

Basin #1 - 25 Year Storm Event		
Days	Hours	Level (ft)
0	0:00:30	0
0	8:29:00	0.25
0	12:07:30	0.5
0	13:36:00	0.75
0	14:47:00	1
0	16:04:00	1.09
0	17:44:30	1
0	19:49:00	0.75
0	22:11:30	0.5
1	1:20:00	0.25
2	13:45:30	0
3	23:59:30	0
4	0:00:00	0

Figure G-2: Storm Hydrograph Data



Figure G-3: Successful Naturalized Detention Basin



# REFERENCES & ADDITIONAL INFORMATION

Village of Lemont

Unified Development Ordinance

<http://www.lemont.il.us/documentcenter/view/124>

USDA Illinois Native Plant Guide – General Design, Application, & Management Considerations

<https://archive.epa.gov/greenacres/web/html/chap1.html>

A Source Book on Natural Landscaping for Public Officials

<https://archive.epa.gov/greenacres/web/html/chap1.html>

City of Chicago: A Guide to Stormwater Best Management Practices

[http://www.cdfinc.com/xm\\_client/client\\_documents/Chicago\\_GuideTo\\_Stormwater\\_BMPs.pdf](http://www.cdfinc.com/xm_client/client_documents/Chicago_GuideTo_Stormwater_BMPs.pdf)

EPA Storm Water Technology Fact Sheet – Wet Detention Ponds

<http://nepis.epa.gov/Exe/ZyPDF.cgi/200044D0.PDF?Dockey=200044D0.PDF>

Natural Resources Conservation Service: Bioswales. . . absorb and transport large runoff events

[http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs144p2\\_029251.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_029251.pdf)



# GLOSSARY

**Acceptable Species:** Vegetative species that have been seeded or planted as specified and/or volunteer native species with a C-value of 2 or greater, except for those species listed in Appendix-A.

**Aerial coverage:** The vegetation covering the ground surface above the ground surface; including all leaves, stems, flower parts, etc. Aerial coverage can be visualized by considering a bird's-eye view of the vegetation.

**Cover:** The vertical projection of vegetation from the ground as viewed from above.

**Density:** Numbers of individuals or stems per unit area.

**Dominant Species:** Plant species or species groups, which by means of their number, coverage or size, have considerable influence or control upon the conditions or existence of associated species.

**Erosion:** The washing away or dislodging of soil by water, wind or ice.

**Established:** Establish is defined in botany as a species being allowed to thrive and reproduce.

**Invasive Species:** An undesirable species of plant or animal, often non-native, that competes with desirable, native plants and animals for light, space, water, food and nutrients. An invasive species, left untreated, will destroy the integrity of an ecosystem and will often become the only plant or animal inhabiting a particular landscape.

**Native Species:** 1) an indigenous species that is normally found as part of a particular ecosystem. 2) a species that was present in a defined North American area prior to European settlement.

**Ocular Assessment:** The act of making a professional judgment about something based on what is physically seen by the observers eyes.

**Plant Community:** A group of plants that need a particular set of environmental conditions (i.e. light, soil type, moisture) in order to thrive. Examples include dry prairie, mesic prairie, wet prairie, wetland, emergent, savanna, dry-mesic woodland, etc.

**Planting Area:** The physical area(s) of a project site receiving site preparation, planting and/or stewardship activities. A plant community may consist of multiple planting areas.

**Quadrat:** Small areas of a standard size placed along transects or selected at random to act as representative samples for assessing the local distribution of plants or animals.

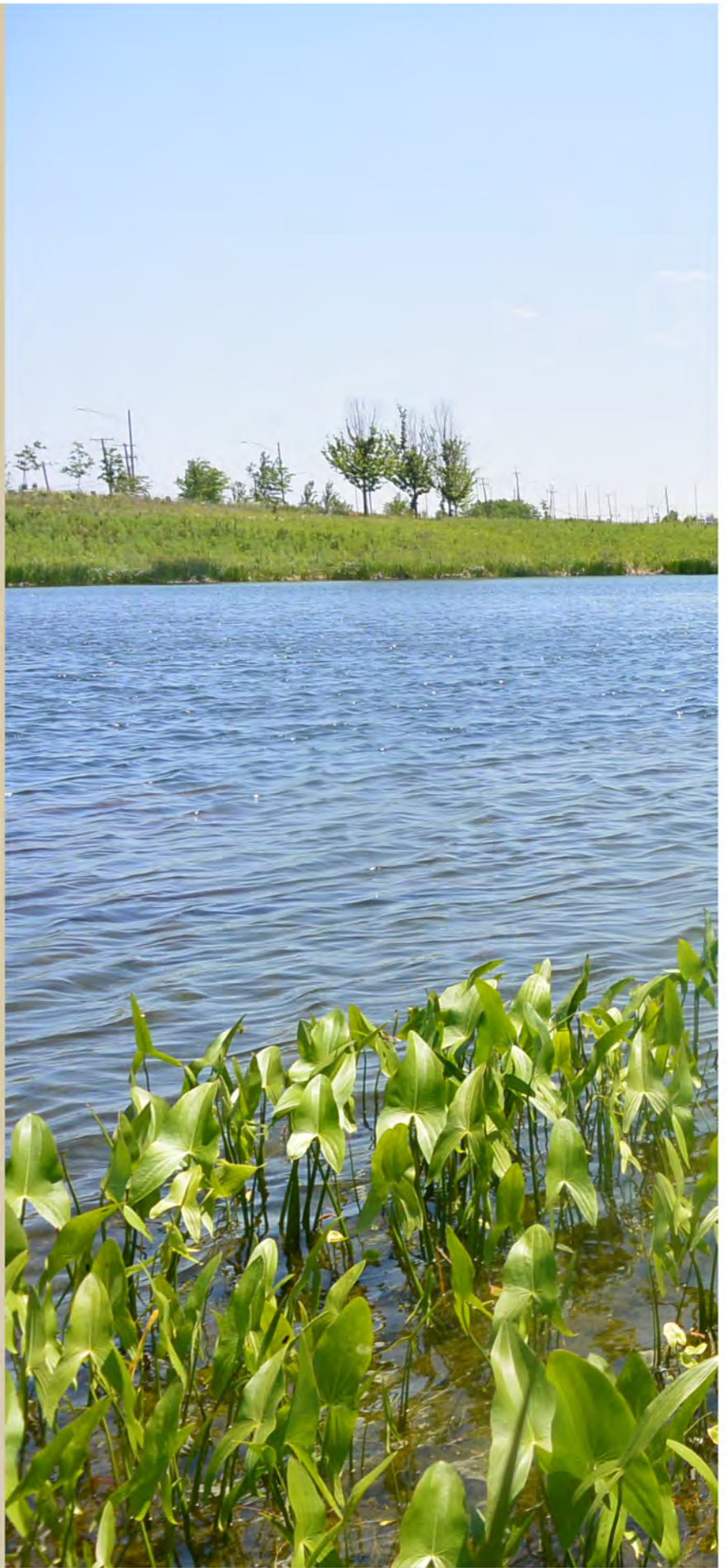
**Remnant:** A surviving trace or vestige of vegetation that has remained undisturbed or minimally undisturbed since European settlement. Remnant habitats are often found in fragmented form dissected by human development with a highly diverse number of native plants or native indicator species.

**Transect:** A straight line through a natural feature or across the earth's surface, along which observations are made or measurements taken.

**Vegetative Cover:** The percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Vegetative cover may exceed 100 percent.

**Vigorous:** Well-rooted in soil and displaying healthy, strong vegetative growth.





Village of Lemont, Illinois  
418 Main Street  
Lemont, IL 60439

## **V. GENERAL DISCUSSION**

### **A. Update from Village Board**

Mrs. Valone stated there is nothing that has come before the Village Board. She asked if any of the Commissioners had anything for her.

Chairman Spinelli said there was a newly installed fence on the southwest corner of Wend and Walter. It is a solid six foot fence that is approximately three feet off the sidewalk on the side yard.

Mrs. Valone stated she will look into it.

Chairman Spinelli asked if they found out anything regarding the shed that was put on a slab in Smith Farms subdivision.

Mrs. Valone said when she originally approved the shed it was contingent on the approval from the Village Engineer. Sometime between her review and the engineers review it switched to a concrete base. At some point the Village Engineer reviewed it with a concrete base, however it was not supposed to have steps on it.

Chairman Spinelli stated it is in an easement on a concrete slab. The reason he is bringing it up is because he has had neighbors held to the ordinance. The pool that was built on that property was also built in the drainage easement.

## **VI. AUDIENCE PARTICIPATION**

None

Chairman Spinelli asked if there were any further comments or questions. None responded. He then called for a motion to adjourn.

## **VII. ADJOURNMENT**

Commissioner McGleam made a motion, seconded by Commissioner Kwasneski to adjourn the meeting. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

*Minutes prepared by Peggy Halper*

**Village of Lemont**  
**Planning and Zoning Commission**  
Regular Meeting of July 20, 2016

A meeting of the Planning and Zoning Commission for the Village of Lemont was held at 6:30 p.m. on Wednesday, July 20, 2016 in the second floor Board Room of the Village Hall, 418 Main Street, Lemont, Illinois.

**I. CALL TO ORDER**

**A. Pledge of Allegiance**

Chairman Spinelli called the meeting to order at 6:37 p.m. He then led the Pledge of Allegiance. He asked the audience to remain standing and raise his/her right hand to be sworn in. He then administered the oath.

**B. Verify Quorum**

Upon roll call the following were:

Present: Andrysiak, Kwasneski, McGleam, Sanderson, Zolecki, Spinelli

Absent: Maher

Planning and Economic Development Director Charity Jones, Village Planner Heather Valone, Village Trustee Ron Stapleton, and Fire Marshall Dan Tholotowsky were also present.

**C. Approval of Minutes for the June 15, 2016 Meeting**

Commissioner Kwasneski made a motion, seconded by Commissioner Andrysiak to approve the minutes from the June 15, 2016 meeting with no changes. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

**II. CHAIRMAN'S COMMENTS**

Chairman Spinelli greeted the audience.

**III. PUBLIC HEARINGS**

**A. 16-05 23 E. Logan Street Variation**

Chairman Spinelli called for a motion to open the public hearing for Case 16-05.

Commissioner Andrysiak made a motion, seconded by Commissioner McGleam to open the public hearing for Case 16-05. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

### **Staff Presentation**

Mrs. Valone stated that Ken McClafferty, who is acting on behalf of the owner of the property, is requesting a variation to allow driveway access in a Single-Family Preservation Infill District via the street rather than the alley. Staff is recommending denial of the variation. The subject property is currently vacant and the applicant is proposing to construct a single-family home on the property. The subject property is located two lots west of Brown Park along Logan Street. An alley runs between Custer and Logan with access from Park Place. The alley right-of-way terminates roughly 50 feet east of the subject property where Brown Park is located. Per the UDO “if an existing alley provides access to the lot in question, then detached and attached garages shall be accessed from the alley”. The UDO defines an alley as “a public or private right-of-way primarily designed to serve as a secondary access to the side or rear of those properties whose principal frontage is on some other street”. The standard width of an alley per the UDO is 16 feet.

The applicant submitted a building permit for a single-family home with a two-car attached garage with access off of E. Logan Street on April 14, 2016. Staff denied the permit on April 19, 2016 because of the alley access requirement. The permit had multiple items in addition to the driveway access which did not meet UDO standards including the proposed maximum square footage of the home. The applicant filed an appeal on May 14, 2016, which was denied by the PZC on June 15, 2016.

Mrs. Valone said the UDO states that the variation request must be consistent with the following three standards to be approved. The first standard is that the variation is in harmony with the general purpose and intent of the UDO. The general purpose of the UDO has eight components, six are either not applicable to or unaffected by the variation request. The first purpose that was applicable to the application is ensuring that adequate light, air, privacy and access to property. The variation would not negatively impact light or air to the property. The variation would allow for access to the property from the street rather than from the alley. The property has the same accessibility from either the street or alley. The second purpose that is applicable is protecting the character of established residential neighborhoods. The proposed variation is not consistent with the established neighborhood character. The majority of the properties surrounding the subject property have detached garages with driveways that access via the alley. Those homes that do have driveways with street access also have detached garages located in the rear of the properties. The proposed two-car front load garage and driveway is not consistent with the neighborhood.

The second standard for granting variations is that the plight of the owner is due to unique circumstances, and thus strict enforcement of the UDO would result in practical difficulties or impose exceptional hardships due to the special and unique conditions that are not generally found on other properties in the same zoning district. The UDO states that in making a determination whether there are unique circumstances, practical difficulties or particular hardships in a variation petition that there are five factors that should be taken into consideration. The first factor is that the particular physical surroundings, shape, or topographical conditions result in a particular hardship upon the owner that is distinguished from a mere inconvenience. The subject property is the last remaining vacant property along East Logan Street from Park Place to Brown Park. The subject property has similar lot size, shape, and topographical conditions as the surrounding properties. The subject property gradually slopes down from the front of the property to the rear property line. This is similar to the properties that are east and west. The properties to the north of the subject site gradually slope down from the rear to the front of the property. The physical characteristics of the subject property are not unique when compared to the surrounding properties.

The applicant also submitted a cost estimate for the proposed alley as evidence of a hardship. The applicant estimates the total cost for the construction of the alley would be approximately \$17,000.00. The applicant also estimated that the cost of the street access driveway to be roughly \$1,400.00. The Village Engineer reviewed the estimates and commented that the costs for the alley access were too high and the estimate for the street access driveway was too low. The Village Engineer provided an alternate cost estimate. The cost for the applicant to pave the driveway from East Logan Street to the attached garage with corresponding sidewalk alterations is estimated at \$5,800.00. The estimate for the alley driveway and retaining wall is roughly \$12,000.00. The total estimated cost difference between the alley and street access with a retaining wall is roughly \$6,000.00 which does not create an economic hardship. Additionally, these costs would equally be applicable to all other similar adjacent properties making this not unique for the subject property.

Mr. Valone stated the second factor is the conditions upon which the petition for variation is based would not be applicable generally to other property within the same zoning district. The properties to the west of the subject property along Logan Street all have vehicle access through the alley rather than the street. The alley behind the property to the west prior to 2011, was not paved across the entire rear property line. A detached garage was constructed in 2011 at 15 E. Logan Street and the alley was extended. At that time, the alley was paved only 12 feet past 15 E. Logan's west lot line. The homeowner for 15 E. Logan Street was required to extend the alley across the entire lot to the property line it shares with 23 E. Logan Street. Staff sees no distinction between the condition of 23 E. Logan Street and 15 E. Logan Street or any other lots along the alley in question.

The paved alley currently terminates at the west property line of the subject property. The applicant has indicated that since the alley is not a through alley that it prevents

the use of the alley to this property. The neighboring lots to the west are able to enter and exit their properties effectively via the alley even though it terminates midblock. Currently, 15 E. Logan is the terminus of the paved portion of the alley. The property owner is able to access their garage even though the alley does not extend past its east property line. Thus, the condition of the subject property are similar to the neighboring properties that currently utilize the alley for driveway access.

The third factor is that the alleged difficulty or hardship has not been created by any person presently having an interest in the property. The alleged hardship is partially created by the current owner of the property. The owner subdivided a larger piece of property to create two pieces of property. The subject property was original one large lot improved with a single-family home. The lot was comprised of the subject property and the property known as 15 E. Logan. The original home is situated on 15 E. Logan Street. In 2008, Mako Properties subdivided the larger property to create two smaller properties. When the property was only one large lot there was an existing single-family driveway that accessed from E. Logan Street. Sometime between 2008 and 2009 the driveway was removed and replaced with a service walk since it was partially located on the newly created 23 E. Logan Street and 15 E. Logan Street. The driveway apron still remains in the parkway. However, had 15 E. Logan Street had not extended the alley to the east property line it shares with the subject property there would not have been alley access. The subject property in that scenario would have been separated from the paved alley by another private property.

The fourth factor is that granting a variation will not be detrimental to the public welfare or injurious to other property or improvements in the neighborhood. The request will not be detrimental to public welfare or injurious to other properties or improvements. The fifth factor is the variation will not impair and adequate supply of light and air to adjacent properties or substantially increase congestion in the public street or increase the danger of fire or endanger the public safety. The variation would not endanger public safety, substantially impair property values or increase the danger of fire or congestion.

Mrs. Valone said the third standard for granting variation is that it will not alter the essential character of the locality and will not be a substantial detriment to adjacent property. The requested variation will alter the essential character of the area. The subject property is located in the R-4A District which has specific and unique purposes. The future land use for the subject property defined by the Comprehensive Plan is Infill Residential. The purposes of the future land use is to ensure any new development or redevelopment will be consistent with the established character of the surrounding neighborhood, similar to the intent of the R-4A District. The R-4A properties, unlike the standard R-4 properties have a number of unique standards due to the size of the lots, the older established homes that have been constructed, and the intent and purpose of the R-4A zoning district. Two of the most visible standards that the R-4A regulates are the driveway placement and the size of the homes.



The surrounding properties have detached garages rather than attached garages. The proposed attached two-car front load garage is inconsistent with the majority of the surrounding neighborhood. There are 40 homes within a two block area, of those 40 homes 50% have detached garages that access via the alley, 38% have detached garages in the rear of the property that have street access and 13% have two-car garages that access via the street. Nine homes along Logan Street from Brown Park to Warner Avenue do not have alley access. She showed on the overhead those homes. There is no alley that services the rear of them. If these properties are removed from the study area, the percentage of existing homes with detached garages increases substantially. 65% of homes have alley access, 29% of homes have a detached garage in the rear of the property that accesses via the street, and 6% of homes have attached two-car garages with street access. The proposed garage and driveway does not conform to either the typical driveway or garage configuration that currently exist in the neighborhood.

Currently the property to the east of the subject property is the only home with a driveway that interrupts the sidewalk on the north block face of E. Logan Street from Park Place to Brown Park. The apron in the parkway at 15 E. Logan Street, although present, narrows to a roughly four foot service walk once on the property. The sidewalks on the subject property are important due to the fact that there are no sidewalks on the south side of E. Logan Street from Ridge Road to Warner Avenue. These sidewalks along this block are the only pedestrian friendly access to Brown Park.

Additionally, the proposed variation request could create the basis of another variation application. The proposed home as it is currently depicted in the submitted architectural plans exceeds the maximum permitted square footage for R-4A homes. The R-4A properties are limited in size to conform to the existing homes. The maximum square footage of a home that can be built on the subject property is roughly 2,600 square feet. The proposed home with the attached two-car garage exceeds the maximum area by 192 feet. The proposed driveway and garage are not consistent with the neighborhood and characteristics. If allowed to keep the two-car garage he'll have to make significant alterations to his architectural plans or apply for another variation to be constructed as shown.

Mrs. Valone stated although the next item she will go through is not considered a standard for a variation, the applicant has indicated that providing alley access would aggravate the drainage issues that exist in the rear of the lot and alley. The Village Engineer has reviewed the site design for the alley access and finds that construction of the alley will not aggravate the rear yard drainage. The Engineer's review finds that the paving of the alley would not aggravate nor improve the drainage issues of the subject property or the property to the north. Although the alley extension represents an increase in impervious area, it is not a significant increase to create stormwater issues since the property to the north is already lower and accepting some portion of the subject property's runoff. The home on the northwest side of the alley constructed an asphalt edge that interrupts the stormwater and directs it to the grass

area behind the subject property. The berm was likely intentionally created by the neighbor to direct more stormwater to the subject property as the site has been vacant for years.

The property was visited by staff the morning after a large rain event on July 8, 2016. During that time there was no pooling of water in the rear yards of the subject property or on the neighboring property to the north. The only pooling of water that was observed in the alley was along that asphalt edge that directs water toward the subject property.

Mrs. Valone said the UDO requires that the applicant demonstrate consistency with all three of the variation standards. Staff finds the variation does not meet all the standards for granting approval. Staff recommends denial of the variation. The driveway access and proposed attached front loading two-car garage is not consistent with the character of the neighborhood. The property is not unique from the neighboring properties that already utilize the alley for driveway access. The UDO requirement to provide alley access has also recently been enforced on a nearly identical property immediately west of the subject site. The construction of the alley access does not create an economic hardship and the paving of the alley will not aggravate drainage issues in the rear yards.

Although staff recommends denial of the proposed variation, if the PZC concludes that the standards for a variation have been met by the applicant, staff would recommend that the variation require a detached garage located in the rear of the property, rather than the proposed front loading garage, to better conform to the character of the area. She stated this would conclude staff's report.

Chairman Spinelli asked if any of the Commissioners had questions for staff.

Commissioner McGleam said in staff's report on page four it talks about in 2011 the Village required them to extend the alley across the entire property line. He asked what was that pursuant to.

Mrs. Jones stated at that time there was an application for construction of a new garage. It had to be accessed off the alley and the alley was unimproved at that time.

Commissioner McGleam asked if this was spelled out in the UDO.

Mrs. Jones said if an alley provides access and a garage is proposed in the R-4A then the garage must be accessed off the alley. It is incumbent upon the person who is building the garage or the home to construct the alley to provide the access. The administrative interpretation has been if the pavement is to the subject's property line then the alley is deemed to provide access. As an administrative policy they do not require an applicant to extend an alley across other people's property to provide access to their improvement. It is only on the right-of-way immediately adjacent to their property.

Commissioner McGleam stated the Village Engineer stated that the storm water runoff would be to the property to the north.

Mrs. Valone said the property to the north is already accepting some water because it is lower than the subject property. Per State law that property will have to continue to accept that water but any additional water that is created based on this development has to be mitigated.

Commissioner McGleam asked if there is a responsibility for stormwater control within the public right-of-way. After that alley is developed and is accepted by the Village it becomes public right-of-way.

Mrs. Valone stated the amount of stormwater in theory that would be generated is not significant enough to impact the property to the north. The way it is built is that it is crowned so you are pushing water off to both sides so they are both accepting some of the stormwater.

Discussion continued in regards to stormwater runoff from an alley.

Commissioner Andrysiak asked if the 200 square foot credit was applied for having an attached garage.

Mrs. Valone stated yes she did and he was exceeding code restrictions.

Commissioner Andrysiak said one of his concerns is during the winter when a plow comes down and piles up the snow at the end.

Mrs. Valone stated right now they would be pushing the snow to the back of 23 E. Logan Street. There is still some area after 23 E. Logan where the snow can be piled up.

Commissioner Andrysiak asked if the easement on the lots was part of the footage calculation.

Mrs. Valone said no it is not.

Chairman Spinelli asked if there were any further questions for staff. None responded. He then asked if the applicant wanted to come up and make a presentation.

### **Applicant Presentation**

Ken McClafferty, builder acting on behalf of the owner, stated he is requesting a variance to have a driveway have access off of Logan Street. The purpose of the UDO was to regulate the height, building coverage, and the impervious surface of the

residential unit. By requiring them to pave 16 by 50 feet of alley it would add more impervious surface which is going against the UDO's intention originally. By paving the alley it would require more pavement in the rear than in the front. Also in the R-4A Infill District it intended to provide owners for infill development to vacant lots. The only thing they are looking for is to have access off of Logan Street. As far as the square footage they are willing to comply.

The Illinois Department of Transportation Bureau of Local Roads and Streets Manual states that an alley should connect to a public street at each end and should not terminate at a permanent dead-end. There are many reasons for this including public safety and particularly snow plows, drainage, and service vehicles. The other reason they are requesting the variance is for financial hardship. He said he still does not agree with the Village Engineer's numbers for the cost of putting an alley in. He has priced a couple of paving companies and just for the alley it would be \$10,000.00. He has figured it would cost about \$25,000.00 in total which includes the retaining wall.

In regards to stormwater, the berms that are in the alley clearly shows that there are drainage issues. If there were no drainage issues then the homeowners would not be putting berms there. The alley is on an angle and he feels it does not conform to IDOT regulations either. All the water on that alley is being guided down to the grassy spot behind the subject property. If they pave that alley then all that water has to go somewhere else and the same thing with the snow plows. The snow plows will first tear up all those berms. All the homes that have driveways and detached garages on the back of their properties also have curb cuts on Logan Street. If they have access in the back then they are going to be taking up more parking on Logan Street because they will not be able to get into their garage or it won't be convenient for them. He asked for the Commission to approve the variance based on these reasons.

Chairman Spinelli asked if any of the Commissioners had questions for the applicant at this time.

Commissioner McGleam asked if the owner of 23 E. Logan have half an assessment for the alley.

Mrs. Jones stated no it's a public right-of-way.

Mr. McClafferty stated the neighbors to the north have been maintaining that alleyway and cutting the grass. He said they could have claim to that land.

Commissioner Zolecki clarified that they are not looking for any other variances.

Mr. McClafferty said they are going to build it to the R-4A requirement and they are only looking for the access variance.

Commissioner Zolecki asked if he was interested in revising the plans and making the garage detached.

Mr. McClafferty stated no they plan on reducing the square footage of the home.

Commissioner Zolecki said one thing that was mentioned was maintaining the character of the neighborhood. He asked did he feel that an attached front-load garage would enhance the character of the neighborhood.

Mr. McClafferty stated he counted 17 homes.

Commissioner Zolecki stated there is none west of Brown Park.

Mrs. Valone stated staff did not include the south side of Logan Street as part of the study area because there are not alleys dedicated there. She showed on the overhead the two areas that are comparable because they both have alley access.

Mr. McClafferty said they are on the same street and in character of the neighborhood.

Mrs. Valone stated they do not have the same requirement with regards to alley access.

Mr. McClafferty said the Commissioner was talking about an attached garage and there are attached garages on that side of the street.

Mrs. Valone showed on the overhead where there are some attached garages.

Commissioner McGleam asked if there were attached garages on the south side of Logan.

Mrs. Valone stated there were but they do not have alley access so they would not be treated the same in the R-4A.

Chairman Spinelli said if this gets a positive recommendation, the neighbor to the west that is not using the old existing apron, he would want to see that whole entire apron removed. Between the existing apron, the new apron and the existing apron to the east there would be about 35 feet of concrete across the 50 feet of frontage. He suggests if this gets a favorable recommendation or if the Village Board approves it he suggests that the existing apron from the neighbor to the west gets completely removed. If its barrier curb then that should get replaced so there is only a curb cut in the neighboring for this parcel. If it is not done then there is too much concrete on Logan in this location.

Chairman Spinelli asked if there were any further questions for the applicant. None responded. He then asked if there was anyone in the audience that wanted to speak in regards to this public hearing.

## **Public Comment**

Philip Steck, 28 E. Logan Street, said he would like to make a clarification about the alley. It has always been a dedicated alley and will not be created as an alley. He has lived there for 45 years at that particular residence. That alley used to go all the way up to Brown Park. Before it was the park it was a large ravine and that is why the alley stopped there. The alley was gravel and the people next to 15 E. Logan weren't using it. The alley was not being maintained by anyone so the grass grew up. If you dig up a layer you will probably find the stone. To put more gravel down it will not cost \$10,000 to \$15,000. He does not think it is a hardship, but it is for the people that are on either side of that lot being developed. He feels if a house is going to be built there then the access should be off of the alley otherwise it will not look right.

Tony Frank, 15 E. Logan, asked if they had an a elevation of the house so they could see what they were thinking of building.

Mrs. Valone showed on the overhead the elevation.

Mr. Steck asked what the current code was for the side yard setback on a 50 foot lot.

Mrs. Valone said it is 12% of the lot width which would be 6 feet.

Benton Bullwinkle, 37 E. Logan Street, stated his home is one of the older homes in the neighborhood. At one point he had owned the two adjacent lots. The homes were built before the alleyways were set. The home adjacent to him has a similar garage in front and was built during the 80's. He had met the man who subdivided the lot and at that point the UDO was not in place. At that point the R-4A was whatever happened. On the other side of him, he had found out that the builder had built the house in the wrong spot, paid the fine and left it where it was at. He said in regards to the character of this street, he would hope that the UDO would be enforced the way it is written. There is a lot of redevelopment interest in Lemont and that is wonderful. However, the character of this neighborhood needs to be respected especially in regards to the use of the alleys. His parents are looking to buy 18 E. Custer which is directly behind the subject property. He is aware that the owner has been mowing the alley.

Madeline Bullwinkle said she feels that the alley would be a great asset. Her husband is currently in a wheelchair so driving to their current garage from Custer Street is daunting. There is a steep incline so putting in a fresh garage with access from the alley would be much easier.

Chairman Spinelli asked if there were was anyone else in the audience that wanted to speak in regards to this public hearing. None responded.

Commissioner Andrysiak stated he has been up and down that alley and you cannot turn around in that alley without trespassing onto someone's property. That alley ends right at the park where kids might become a hazard. This is the last lot in the

neighborhood and we are trying to match it to some of the oldest homes in the neighborhood. The lot is very desirable and land is very limited in Lemont so they will be tearing down houses. He knows when he passes someone is going to buy his house, most likely tear it down, and build something huge there. The owner talks about a hardship with having to put in the alley but what about when he goes to sell the house. When he puts a detached garage in the back the 100 year old tree is gone and so is the backyard. He feels they will take a hit of \$10,000 when he tries to go to sell it because there is no yard. He feels that this house is not that big of an upgrade to the neighborhood.

Commissioner Sanderson asked why this house is not that big of an upgrade.

Commissioner Andrysiak said around the corner there is a \$600,000 house that has been there for 40 years. This is a very mixed neighborhood. If a developer has to build a detached garage on lots to create what is not a desirable house anymore it will be like Berwyn bungalows. It will help if you upgrade on an infill neighborhood.

Christina Nunez, 21 E. Logan Street, stated they are a young couple that is recently married and they bought a house next to the subject property that has a detached garage. She said they are part of the new generation and that did not stop them from buying a house with a detached garage.

Madeline Strapple said if that is the logic you are going to use then that just creates a slippery slope. Next time someone else sells a house that is too small then let's just knock it down and build a bigger house with no yard. She stated she disagreed with what Commissioner Andrysiak had stated.

Gary Hartz, 18 E. Custer, stated he is the owner of the house to the north. He asked if they knew what the width of the house was that they were intending on building.

Mrs. Valone said it is about 35 to 36 feet.

Mr. Hartz stated it is hard for him to decipher the way it is situated if any of the landscape would dictate the water coming back to Logan. He does not agree with the engineer that stated there was no problem with the water being controlled right now. In 1991 or 1992 when Brown Park was developed the contractor was from Milwaukee. The contractor and Bob Porter were there admiring the work that was done. They took all of the dirt and back filled it all the way to the top of the wall and pitched it right down to his lot line. He had talked with Mr. Porter and the contractor about where the water was going to runoff to and did not get any answers. In the spring water was pouring in through the masonry wall of the garage and through the front door. When he talked to Mr. Porter about it he had said that they needed to do something about that. That was 25 years ago and that is why the water stops where it does now. If the subject property does not pitch back towards Logan then every bit of the rain will come down and it will be accelerated because of the driveway in the back. He said he brought in six yards of dirt to build the berm because water was

coming across his whole back yard. He had to tear out the garage floor because so much of the water was coming through. There is a water problem there and there needs to be a catch basin at the end of the alley were it would extend to.

Mr. Hartz said he is not sure where the downspouts and sump pump are going to drain out for this house. However the Village directs the developer to put in that alley, he hopes that there is some kind of drain that is put in and not some hand dug shovel drain that there it is right now. There is a water issue now. Because of that double apron that Chairman Spinelli had talked about a neighbor of his had four inches of water in his basement. The neighbor had to build a trench around his house. This is only going to bring them back to the original problems.

Ken McClafferty stated what the gentleman is saying is what they are trying to prevent. By putting in an alley it will cause problems to the properties to the north. There will be less places for the water to go and more of a mess with the snow plows piling up the water.

Margaret Crowell, 8 E. Custer, said she will be sharing the alley with the property. Speaking about water problems, there has been water problems in that alley for as long as she could remember. It was just a stone alley when they first moved in. There was at one time a big pipe buried in the back that carried storm water down towards the park. They recently paved the alley about two years ago. The paving of the alley did alleviate a lot of the water problems on the north side and they also installed that small berm. Every time you build another house uphill of a house you are going to have drainage problems.

Mrs. Crowell stated she feels it is important that Lemont focuses in on its historical district. There is not a large amount and they need to maintain it. There are many places in Lemont to build rather than one block away from the historic district and be non-conforming. The majority of the houses on that street are one-story homes and are like Berwyn bungalows. Some of us do like our Berwyn bungalows. There are lovely homes in Berwyn that have detached garages that are being bought out by young couples. There have been other people in their neighborhood that have rebuilt and they have been required to put in a detached garage. Also, have a 2,000 square foot house in this neighborhood when most of the homes are 1,000 square feet is out of character. It is important to maintain the character of the neighborhood at the same time they make some accommodations for redevelopment. These accommodations have been written into the R-4A district and it should be followed.

Mr. Bullwinkle said they are talking about a 1,900 square foot house that is going to create runoff and alley. There is going to be runoff from any development on this lot. He believes that the only thing that is going to protect this neighborhood is the UDO and it should be honored to the full effect.



Joe Forzley, 22 E. Logan, stated he does not see how all this can be built on this property. If someone on the west has a roof problem, to get a ladder up there you are on another person's property.

Commissioner Andrysiak asked what types of water problems is the property to the north having currently with the vacant land. Is the neighbor thinking that a detached garage with the alley would be less detrimental.

Mr. Hartz said you can't really tell without having a grading scheme. He is not sure if having the garage in the front attached would put the grading back instead of the sidewalk all the way back like it is now. If it does then it might help some because there would be two downspouts that would go to the front and drain onto Logan Street.

Chairman Spinelli stated the site plans that they have right now show that the drainage will be going to the north. The only thing he can decipher from the site plans is possibly if the driveway, if it was in front, would drain to Logan but everything else is going to go north.

Mr. Hartz said by having the driveway coming in from the alley there is going to be more water going to the north.

Chairman Spinelli stated whether the garage is in front or the back there is going to be drainage to the north.

Mr. Hartz said the problem is going to be greater by having the alley because there will be no grass to impede the water running off. The water will runoff until it hits the berm of the park. Then in the winter with ice and snow buildup the water will run into the foundation of his garage. He is sure that if the alley is put in without a catch basin then it is going to be a hard time for all the people to the north.

Mr. Steck stated the lot slopes to the north. If a driveway is going to drain towards Logan then the house would have to be eight feet higher than the house next to it. If the alley is not required, that is still a dedicated alley so the owner of that house has every right to drive down that alley and park behind that house.

Chairman Spinelli said they would be able to use the alley but they could not park in the alley.

Ms. Franck stated that they are talking about water concerns when they are putting a home 7 feet from the property line. She asked where is the water going to go that comes off of the sides.

Chairman Spinelli said this lot would have to make provisions to carry that water away from their house.

Chairman Spinelli asked if there was anyone else that wanted to speak in regards to this public hearing. None responded. He then called for a motion to close the public hearing.

Commissioner McGleam made a motion, seconded by Commissioner Andrysiak to close the public hearing for Case 16-05. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

### **Plan Commission Discussion**

Chairman Spinelli asked what the maximum impervious coverage is for the R-4A District.

Mrs. Valone stated it is 65% of the total lot area in the R-4A.

Chairman Spinelli asked if the detached or attached was less than the 65%.

Mrs. Valone said either detached or attached must be at or below the 65% impervious coverage.

Chairman Spinelli asked if the Village Engineer or staff researched whether there was storm sewer down that alley. He asked if there were any atlases that would show that.

Mrs. Valone stated the Village Engineer has not investigated that.

Chairman Spinelli said whether it is this proposal or another building on this lot it will have a negative impact to the residents to the north. If this moves forward and possibly prior to getting an actual building permit, the Village Engineer or Public Works should look to see if there something in this alley. It is only 50 feet from the park it might only take a 100 foot storm sewer to get a little catch basin back there and all the roof drainage and side yard swales can go to the catch basin. This way there is no negative impact to the neighbors in regards to runoff. He stated however this proceeds he is requesting that the Village Engineer or Public Works look to see if there is a storm sewer in the alley or whether the drainage ditch in the park could accept water from here.

Commissioner McGleam asked whether the Village has installed permeable alley paving anywhere.

Mrs. Jones stated not to her knowledge.

Discussion continued in regards to cost of permeable paving and the placement of the garage.

Commissioner Zolecki said they are here to see if there is consistency demonstrated for the three requirements for the UDO, which he finds hard that any of them feel that they do. Comments from both audience and the Commission as to whether this development is a desirable project is a very subjective comment. There is a protection put in place for these areas and these types of homes are readily available in other areas. The R-4A are the smallest lots so that is why the side yard requirements are the smallest there are. Mistakes may have been made on these lots but that is why they are here now and the protection is put in place.

Commissioner McGleam stated in staff report there is mention of a second option for approval which would include a detached garage with a side drive off of Logan Street. He asked do they need to decide which option they are wanting to vote on.

Chairman Spinelli said the site plan that they have in front of them, with having seven foot side yards, he would not be sure how they would get a garage along the side. The builder would end up losing an additional eight feet of house.

Mrs. Jones stated the point of that revision was though staff feels the standards for the variation has not been met. However, if the PZC felt otherwise, a detached garage in the rear of lot would be more in keeping of the area than an attached front load garage.

Commissioner Sanderson said he agrees with Commissioner Zolecki. He has done some building in Hinsdale and they encourage detached garages. He disagrees that this is an outdated development style by having a detached garage. They have heard from some of the members of the community and feel that they echo that. There is talk about losing the rear yard but he feels if it is in the front then you will be losing the front yard. He thinks having a detached garage with alley access makes sense.

Commissioner Kwasneski stated he has lived on the street for over 20 years and feels that the character is most important thing to preserve. He agrees with Commissioner Sanderson.

Chairman Spinelli asked if there were any further comments or questions. None responded. He then called for a motion of recommendation to the Mayor and Village Board.

### **Plan Commission Recommendation**

Commissioner McGleam made a motion, seconded by Commissioner Sanderson to recommend to the Mayor and Village Board of Trustee approval of Case 16-05 Logan Street variation with one condition:

1. The Village work with the property owner on a potential permeable alley system.

A roll call vote was taken:

*Ayes: Andrysiak*

*Nays: McGleam, Sanderson, Kwasneski, Zolecki, Spinelli*  
*Motion denied*

Commissioner Kwasneski made a motion, seconded by Commissioner Sanderson to authorize the Chairman to approve the Findings of Fact for Case 16-05 as prepared by staff. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

**B. 16-06 13769 Main Street Special Use and Variation**

Chairman Spinelli called for a motion to open the public hearing for Case 16-06.

Commissioner Kwasneski made a motion, seconded by Commissioner Zolecki to open the public hearing for Case 16-06. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

**Staff Presentation**

Mrs. Valone stated that Fornaro Lot, on behalf of the contract purchaser Main Street Lemont, LLC, is requesting a special use to allow for parking and storage of trucks and trailers at 13769 Main Street. The applicant is also requesting a variation from the UDO to allow for the proposed detention ponds on the site be gravel rather than sod. Staff is recommending approval with conditions for the special use and denial of the variation.

The subject property is currently being operated for the stockpiling of materials, processing of concrete and asphalt, and office for K-Five Construction Corporation. The applicant is purchasing the property to relocate their trucking company. The site is proposed to be used for parking of trucks and trailers. The site plan indicates parking stalls for 156 trucks. The existing 14,000 square foot office building will be used for administrative and business operations for the applicant's business. The existing building to the south of the building will be used for truck maintenance. The majority of the west half of the site is currently stockpiled materials for K-Five. She showed the site on overhead. K-Five has applied for a site development permit to pave the site in preparation of the truck parking and storage. This paving triggers stormwater detention requirements for both MWRD and the Village. The site already has ample aggregate material stockpiled from K-Five, thus the applicant is proposing that the detention ponds be constructed on non-compacted aggregate material that will not support being sodded.

Mrs. Valone said she will first talk about the special use for the truck and trailer parking and storage. The proposed special use is compatible with the neighboring

existing land uses. Properties to the south and west are undeveloped property and the property to the north is the Canadian National railroad. The properties to the east is developed with three buildings for industrial businesses. The proposed truck parking is situated on the west portion of the subject property and the existing buildings are along the east side of the property. Thus, the use is consistent with the existing properties as the office building and out buildings are near the neighboring industrial businesses' building to the east and the trucks are parked/stored by the undeveloped parcels.

The applicant has indicated that the truck traffic for the site will be restricted to Main Street east of the subject property and Route 83. The applicant has submitted a traffic study modeled after another larger facility in Melrose Park. The results indicate that the proposed truck traffic and trailer storage will generate a significant amount of traffic in the area. It is anticipated that the great majority of the site-generated traffic will be traveling to/from the east on Route 83 given its proximity of I55. The proposed traffic will result in an increase of less than two percent, which their traffic consultant has indicated is insignificant and will not be perceived by the drivers in the area. The proposed use's traffic can be accommodated by the adjacent roadways because the existing traffic that is already much higher than the proposed generated use.

The applicant has indicated that other than the requested variation for the detention facilities, the subject property will comply with the required landscaping for M-3 districts. The UDO requires M zoned properties along a public street to have either two plant units per 100 linear feet of street frontage or have a fence with a minimum of 95% opacity and a minimum height of six feet and at least one plant unit per 1200 linear feet. The property has approximately 387 feet of frontage along Main Street. The existing tree survey for the area along Main Street depicts 105 trees; 19 of them are located on the applicant's property, are in fair or good condition, and are non-prohibited species per the UDO. Fifty-nine of the trees are located in IDOT's right-of-way. Of the 19 trees on the subject site, 17 of them are located in the east 200 feet of frontage from the entrance of the site. The UDO requires plant units per 100 feet which are consistent of accommodations of plant types. The existing 19 trees would exceed the minimum number of canopy trees required for the site if the placement was not clustered within the first 200 feet of frontage along Main. Additionally, four of the 19 trees are on or near the boundary line with Main Street which has a right-of-way which could potentially be removed by IDOT at any given time. The remaining 180 feet of frontage does not achieve all the minimum required landscaping requirements per the UDO.

Mrs. Valone stated so based on these considerations as well as the topography conditions, the existing vegetation within the Main Street right-of-way, staff recommends accepting the applicants existing canopy trees as fulfillment of the plant unit requirement for the first 200 feet of frontage along Main Street. For the remaining 187 feet frontage along Main Street staff recommends that the applicant add an additional nine juniper trees to achieve the UDO minimum required plant

material. Also, to provide some all season screening to the site. In addition to preserving the 19 trees credited and planting nine new junipers, staff recommends that the applicant preserve all the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species on the site.

The applicant is proposing to convert the existing stockpile areas into truck and trailer parking/storage stalls. The parking area is located in the west and northwest portion of the subject property which is buffered from Main Street by neighboring undeveloped properties. The proposed entrance to the truck parking is located 200 feet southwest of the office building. She showed on the overhead where the buildings and parking were located and how truck traffic will flow through parking lot. The existing eastern portion of the site will remain as is with minor paving improvements. Thus, the parking/storage use is buffered from Main Street and the undeveloped parcels to the east. Staff recommends that the truck parking be restricted to the area shown on the parking layout, preventing trucks from being parked on the eastern portion of the subject property.

Mrs. Valone said she will now go through the variation for the detention ponds. The UDO states the variation must be consistent with the following three standards to be approved. The first is that it is in harmony with the general purpose and intent of the UDO. There are only two components out of the eight with the first being ensuring adequate light, air, etc. The proposed variation would not negatively impact. The second is maintaining and promoting economically vibrant and attractive commercial areas. The proposed variation would allow for visually unappealing detention ponds. The site is separated from Main Street by undeveloped vegetated spaces that currently act as a buffer. However, the site is proposed to be raised and the neighboring properties could develop in the future revealing more of the site to Main Street. Additionally, one of the goals of the Lemont 2030 Comprehensive Plan, Community Chapter, is to develop guidelines for industrial development. The UDO has not yet been updated to include such standards, however, minimal aesthetic appeal is still important for M Districts. Thus, the variation for the detention ponds does not promote attractive commercial/industrial area.

The second standard is that the plight of the owner is due to unique circumstances, and thus strict enforcement of the UDO would result in practical difficulties. The first factor is that the physical surroundings, shape, or topographical conditions result in a hardship. The subject property is located north of Main Street and south of the railroad tracks. The properties to the east are heavily vegetated and are at a slightly higher elevation than the subject property however, they are currently undeveloped. The applicant has proposed two non-compacted aggregate detention ponds, one located in the west corner of the property and the other in the northwest corner of the property along the railroad tracks.

The top soil is rocky due to the topography of the area and the stockpiling of construction materials, which has removed most of the top soil from the site by the nature of its use. As such the site is not conducive to grass or other vegetation. However the property is proposed to be raised through the use of non-compacted aggregate fill to construct both the parking area and the detention facilities. As the fill has to be added to the subject property, a portion of the fill could be top soil, which would allow the detention ponds to be sodded. There is an existing sodded detention pond located on the property near the east property line. She showed on the overhead the location of that detention pond.

Mrs. Valone said the Village Ecologist reviewed the submittal and commented that the information provided does not show that implementation of vegetated detention facilities can be conclusively ruled out. The proposed plans indicate that two feet of fill will be added to the site. If the applicant uses clean fill it should be possible to get vegetation to establish even if the existing soils create a restrictive layer. Additionally, the applicant has not submitted any soil borings to indicate that bedrock is an issue. The applicant's report states that the purpose of using the non-compacted aggregate material is to promote infiltration into the soils, thus the soils must have some capacity to percolate.

The second factor is the conditions upon which the petition for variation is based would not be applicable generally to other property within the same zoning district. The industrially zoned properties to the west and south are undeveloped and heavily vegetated. The neighboring properties to east are developed and do not appear to have detention ponds. The Maley Road Industrial Park area, which is also zoned M-3, are serviced by wet detention basins. These wet detention basins are no longer permitted by the Village. Art Logistics, another industrial zoned property, roughly a mile from the subject property, is under construction and will have a sodded detention pond.

The third factor is granting of the variation will not be detrimental to the public welfare or injurious to other property. At the moment with the undeveloped properties it is not. If the properties were developed it would create some unintended visual impacts on the neighboring property. The fourth factor is that the variation will not impair an adequate supply of light or air to the property, which it will not.

Mrs. Valone stated the last standard for granting variations, is it will not alter the essential character of the locality. The site is currently 91% impervious. The detention ponds being sodded would reduce that lot coverage and increase green space. The neighboring developed properties are similar in lot coverage; however, the neighboring properties either have detention facilities or wet bottom basins. The proposed variation is not consistent with the essential character of the existing detention pond on the property that is dry detention and sodded.

The Village Engineer had no objections to the use, or the use of the aggregate detention facilities. The Fire District did comment that most of their comments made

relate to items during site development. The truck repair building may require the installation of a sprinkler system.

Mrs. Valone said the proposed variation for the detention ponds is not consistent with the neighboring developments or the existing dry detention pond on the subject property. The applicant has not demonstrated a hardship based on the physical characteristics of the property. The UDO requires that the applicant demonstrate consistency with all three. Staff finds that the standards are not met and thus recommends denial of the variation.

The applicant has provided preliminary information to demonstrate that the proposed special use for truck and trailer parking will not affect traffic conditions. The applicant will comply with landscaping screening requirements for the property. The proposed land use is consistent with the existing surrounding properties. Thus, staff recommends approval of the special use with the following conditions:

1. The applicant shall preserve the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species trees on the site.
2. The applicant must also submit a landscape plan for the site including the requirements from condition 2 above.
3. No parking or storing of trucks and trailers outside of the designated parking area, as shown in the submitted Parking Layout Plan.

There was one final condition that was shown in the staff report that has been satisfied. The applicant has turned in a detailed traffic study which confirms all the preliminary findings. She stated this would conclude staff's presentation.

Chairman Spinelli said knowing that MWRD promotes infiltration type systems, looking at this he is seeing it as an infiltration basin with a controlled release. So not necessarily infiltrating into the ground but rather using the voids in the stone for storage and then controlling the release. He stated it was mentioned about detention basins currently being built or designed down the street that have soils. He asked if that was being designed as infiltration or regular stormwater detention.

Mrs. Valone stated Art Logistics is being developed just east of the property. They are using dry detention basins. They were permitted before the WMO came through, so they are under different requirements.

Chairman Spinelli asked if MWRD had been contacted.

Mrs. Valone said they have been contacted and she will let the applicant speak in regards to that. They did have a pre-application meeting with them and they did go



through a number of these items. From MWRD perspective they are relatively comfortable, but again from a local level they do have these requirements.

Chairman Spinelli stated if there are conflicting requirement between the municipal level and MWRD, where is the Village going to go with this. Ultimately they have to comply with MWRD.

Mrs. Jones said it is her understanding from the Village Engineer that either type can meet the WMO requirements.

Chairman Spinelli stated there still has to be volume control with MWRD and a typical dry detention basin will not meet volume control. A modified detention basin would meet it. He sees an area that is already gravel and we are making them bring in soil to grow grass and if they are using infiltration with using the voids of the stone for storage it seems counterintuitive to fill those voids with soils.

Mrs. Valone said she saw from the Village's Ecologist comments they are bringing in quite a bit of soil so there is an opportunity there. The applicant has indicated that it will be aggregate soil. The Village Ecologist is indicating that there is no reason why part of it could be aggregate and the other be clean fill to provide for some type of vegetation.

Commissioner McGleam stated in regards to the KLOA traffic study, there is a table number 3 with estimated development generated traffic volumes. It shows that the average peak hour trips per day in the morning would be 8 inbound with 11 outbound and weekday evening with 11 inbound and 11 outbound. That is giving a total volume for the entire day of 41 trucks. He thought the capacity was 250.

Mrs. Valone said in their preliminary comments they indicated that they would like to store over 100 to 200. From their actual site plan layout it indicates 156. If the question is how many are parked there and how many are leaving then she would say let the applicant speak in regards to this.

Chairman Spinelli asked for the applicant to come up and make their presentation.

### **Applicant Presentation**

Mark Scarlato, attorney with Fornaro Law, stated he is speaking on behalf of the applicant for this matter. In addressing the special use application they are in agreement with staff's recommendations and will do everything that they need to do for the landscaping. In regards to the actual lot itself, if you look at the Village's 30 year plan it indicates that area as being industrial. The use that they are proposing is completely in line with the use for the area being a truck/trailer parking/storage facility. There may be 150 trucks there but they will not be all in use all the time every day. The amount of trucks going in and out will be very limited. It's a storage

facility so there is not going to be any change of materials or cargos. There may be a change of trailers between trucks once in a while.

He said there are several buildings on the parcel with one being 14,500 square feet. That building will be utilized all or in part for the trucking business with dispatch and management. There are a number of auxiliary structures on the property. They are expecting at least some of them to be used for repair. The Fire Department had indicated that sprinkler systems may be necessary. If they are then they will do everything they need to do in order to be compliant with code. They are expecting to have approximately 50 employees that will not all be there at the same time. There will be 24 hour truck security. They do not anticipate that they will be storing tankers there. There may be some parking spaces that will be leased out to other companies or fleets, but not independent operators. The applicant themselves have over 15 years of experience in the trucking business with these sorts of uses. Access routes to the property is going to be the quickest route which would be I55 to Route 83 to Main Street.

Mr. Scarlato stated in regards to the request for variation on the detention pond. They agree with the Village with the noble cause of providing green space and making things look better. The problem here is the practicality of it. The apparatus isn't in place to support the sod that they are going to put there. If you put fresh clean dirt there and fill it with sod then the sod is going to die, weeds will invade, and the water to be able permeate will be greatly reduced. One of the problems that has been illustrated by the Village is that there is already invasive species that they don't want growing on the property. With this you are just giving them the perfect opportunity to grow and establish in those detention ponds. He said this would conclude his presentation and he will open it up to questions that the Commission might have.

Chairman Spinelli asked if the intent is for most of these trailers to be empty. His concern is that even if they have 24 hour security, if there is product being stored overnight, the security will be sitting at the entrance which will not be helpful if someone walks onto the property on the far west side. He asked if there are plans to have a mobile patrol to secure the lot after hours and evening especially if there is product being stored overnight.

Mr. Scarlato said he does not believe the product will be stored on site overnight, mostly because of the reason he has stated. In regards to a fence, the property has some issues with elevation. If you're looking to the west frontage on Main Street there is a drop of about 10 to 15 feet so if there was going to be a fence on the property it would have to be over 20 feet to be effective. On the eastern portion on the frontage Main Street they might put up a chain link four to five foot fence or a cable on pull for about 600 feet. The security personal will be someone who is patrolling the entire area.

Chairman Spinelli asked if there were any restrictions for hours of operation for this district.

Mrs. Jones stated no there is not.

Mr. Scarlato said they are anticipating 7 am to 8 pm.

Commissioner Andrysiak stated with a special use they should be provided with a lot of information. What he is hearing is that they are hauling out of there freight, there will be repairs with mechanics, and they will be selling and leasing. He asked if they have all their proper licensing.

Mr. Scarlato said they have all the appropriate licensing. They have already submitted the business license application.

Commissioner Andrysiak asked when they are closing the Lyons facility down and moving to Lemont full time.

Mr. Scarlato stated it depends on whether if they get the special use but they are hoping quickly.

Commissioner Andrysiak asked how they know that they will not be storing tanker trailers there with product in them overnight.

Mr. Scarlato said it is specifically addressed with staff that they are not going to store tankers. It will also be part of a condition with a lease.

Mrs. Jones stated as part of the special use they could include a condition that no hazardous material be stored on the facility. This has been done with other facilities.

Commissioner Andrysiak asked if they are going to be washing and changing oil on the trucks.

Mr. Scarlato said there will be a repair so it might include changing oil. They would need State licensing for that. This is just the first step in a long process.

Commissioner Andrysiak asked if sales tax would be generated for Lemont.

Mr. Scarlato stated yes if there is sales of trucks and leasing.

Chairman Spinelli asked if the Commissioners had any further questions. None responded. He then asked if there was anyone in the audience that wanted to come up and speak in regards to this public hearing.

### **Public Comment**

Frank Jemsek, Cog Hill Golf Club, said he is not opposed but he does have some concerns in regards to their clients that might exit that way. He suggests that an

independent traffic study be done, then at that time it would be the time to either approve or disapprove. His concern is that there might be a safety issue if intersections don't line up. With a traffic study they could look at this and help prevent any safety concerns.

Rick Sniegowski, Village Trustee, stated it will be his intent to recuse from any voting as a Trustee. Tonight he is here representing his company. Whenever his company is involved with anything in the Village he does recuse himself. His company is the seller and they do have a vested interest. Their plant can produce 400 tons in an hour of material and typically a truck can carry 20 tons. That is 20 loads of material per hour going out minimally. Additionally, there are 20 trucks coming back in so they could pick up material and there is also trucks bringing in raw materials. There could be 80 trucks in an hour if they are in a full operation. So to address Mr. Jemsek's concern, he feels that this use will not put as many trucks into use as their company could have.

Mr. Sniegowski said addressing Commissioner Andrysiak question in regards to granting a special use permit. When granting a special use permit it doesn't mean that it covers all special uses. One of the special uses that is going to go away is the special use for operating the asphalt plant. If they wanted to continue that then they would have to reapply for a special use for an asphalt plant separately as a condition to the special use. All things that are allowed under a special use aren't granted just because they have a special use. Each individual one would have to be applied for.

In regards to the detention/retention, the problem is that they don't have a current standard to apply to what is allowed by the new MWO. They do have some grass bottom detention areas, again they would have been functioning the same as Art Logistics because it is prior to the change in law. What is happening now is that they have to have a control release which means the ground itself is holding the water. What they are trying to do is if you look at page 17 in staff's report you will see what an infiltration basin looks like which is different from both of their standards. So infiltration basin is built flat because the rock itself can hold 36% voids in volume of water within itself. So instead of building a plastic tank, you fill it with rock and the open areas of the rock holds the water.

They have submitted some revised drawings, but on there is a calculation of what was the prior pervious retention and impervious areas versus post development. The previous pervious area is 52,000 square feet which represents 9%, which is existing. Post construction the pervious area will be 20% which represents a 120% gain. So it is still over the 70% but they are at 122% more than what is existing out there today. In addition to that they have this controlled containment of water that is still open to evaporate. Most of the area where the parking stalls are at is all paved now which will reduce any dust in the air. To the west of that will be this bigger stone which will be all open without dust. If the buyer wants to have that paved then part of the deal is that they will pave that for them. They are hoping to build this right away.

Chairman Spinelli asked if a formal submittal been sent to MWRD.

Mr. Sniegowski stated they will not give them anything official because they are waiting for this approval. They have an email stating that provided that it is approved by the Village they will let the operation start.

Chairman Spinelli asked so with preliminary review they have no objections with the proposed detention.

Mr. Sniegowski said they have no objections to the concept but there may be some technical issues to address.

Chairman Spinelli asked if there was anyone else in the audience that wanted to come up and speak in regards to this public hearing. None responded. He then called for a motion to close the public hearing.

Commissioner Sanderson made a motion, seconded by Commissioner Zolecki to close the public hearing for Case 16-06. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

### **Plan Commission Discussion**

Chairman Spinelli stated as far as the variation he understands that our ordinance requires grass bottom detention basins, but the new MWRD ordinance requires some form of infiltration control. They actually promote this type of design. As an engineering perspective he feels it will be negative to try and introduce grass on top of stone. As far as the special use, he does not have an issue. As far as truck traffic it has been indicated that it will be a benefit with a reduction in trucks. As far as the variation, because this ordinance is new with MWRD it is something that the Village's Engineer need to look at and try to address how to resolve these conflicts when ordinances change because MWRD governs that parcel along with the Village.

Commissioner Sanderson asked for staff to go over their recommendations.

Mrs. Valone said staff is recommending approval of the special use with three conditions.

1. The applicant shall preserve the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species trees on the site.
2. The applicant must also submit a landscape plan for the site including the requirements from condition 2.
3. No parking or storing of trucks and trailers outside of the designated parking area, as shown in the submitted Parking Layout Plan.

As far as the variance staff was recommending denial.

Chairman Spinelli asked if the parking stalls are completely contained on the hard surface.

Mrs. Valone stated they are.

Chairman Spinelli asked if there were any further questions or comments. None responded. He then called for a recommendation to the Mayor and Village Board.

### **Plan Commission Recommendation**

Commissioner Sanderson made a motion, seconded by Commissioner McGleam to recommend to the Mayor and Village Board to approve the special use permit for Case 16-06 with the following conditions:

1. The applicant shall preserve the Elm trees on the site that are in fair or good condition so as to maintain as much existing screening as possible, while removing the poor condition or dead trees of any species, as well as any prohibited species trees on the site.
2. The applicant must also submit a landscape plan for the site including the requirements from condition 2 above.
3. No parking or storing of trucks and trailers outside of the designated parking area, as shown in the submitted Parking Layout Plan.

A roll call vote was taken:

*Ayes: Sanderson, McGleam, Kwasneski, Zolecki, Andrysiak, Spinelli*

*Nays: None*

*Motion passed*

Commissioner Sanderson made a motion, seconded by Commissioner Zolecki to recommend to the Mayor and Village Board to approve the variation request for Case 16-06. A roll call vote was taken:

*Ayes: Sanderson, Zolecki, Kwasneski, McGleam, Andrysiak, Spinelli*

*Nays: None*

*Motion passed*

Commissioner Kwasneski made a motion, seconded by Commissioner McGleam to authorize the Chairman to approve the Findings of Fact for Case 16-06 as prepared by staff. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

## **IV. ACTION ITEMS**

None

TO: Planning and Zoning Commission

FROM: Heather Valone, Village Planner

THROUGH: Charity Jones, AICP, Planning & Economic Development Director

SUBJECT: Case 16-07 UDO Amendments

DATE: August 5, 2016

---

## SUMMARY

Attached is a table detailing proposed amendments to the UDO to address the provisions related to storage of campers and trailers in non-residential districts, and off street parking of vehicles, buses, and trucks. Revise the requirements for sidewalk construction, institute guidelines for natural areas establishment, and locational requirements for stormwater detention facilities. Additionally, update standards in the appendices of the UDO, zoning districts that allow vehicles related uses, and the definition of telecommunications tower. Words underlined in table are proposed additions to the text of the UDO and words ~~stricken~~ are proposed deletions. The amendments are organized by topic, rather than by chapter, to facilitate discussion.

## BACKGROUND

The proposed amendments revise the off-street parking requirements for all districts. The following definitions are for reference when reviewing the proposed revisions:

**Bus** A motorized vehicle designed and constructed to be operated by a driver and carry more than nine passengers.

**Construction Equipment** A self-propelled motorized vehicle not designed or used primarily for the transportation of persons or property and only incidentally operated or moved over a roadway, and designed and manufactured for the roadway construction, building construction, forestry and landscaping industries. "Construction equipment" includes but is not limited to: skid loaders, bucket loaders, ditchers, excavators, forklifts, backhoes, dozers, and commercial lawn care equipment. The term does not include equipment designed for personal residential use such as riding lawn mowers and snow blowers.

**Recreational Vehicle (RV)** Any building, structure, or vehicle designed and/or used for living, sleeping, or recreational purposes and equipped with wheels to facilitate movement and including pick-up coaches, campers, motorized homes, boats, trailers, and camping trailers not meeting the federal specifications required for manufactured home or mobile home.

**Tractor** A motorized vehicle designed and constructed to pull other vehicles, including, but not limited to trailers, semi-trailers, farm equipment or construction equipment.

**Trailer** A trailer is:

1. A vehicle so designed and constructed as to not move under its own power, but rather to be pulled by a powered vehicle such as an automobile, bus, tractor or truck. This definition of “trailer” also includes “semi-trailer.” A “semi-trailer” is a type of trailer without a front axle and/or where a portion of the weight of the trailer is supported by a dolly, landing gear apparatus, tail of another trailer, or by the fifth wheel or other portion of a tractor; or
2. Any vehicle or portable structure constructed so as to permit occupancy thereof for lodging or dwelling purposes or for the use as an accessory building or structure in the conduct of business, trade, or occupation.





TOPIC: Definitions Telecommunications Tower	Reason for Change
<p><b>Chapter 17.02 DEFINITIONS</b>  <b>Telecommunications Tower.</b> A tower, pole, or similar structure that supports a telecommunications antenna in a fixed location, freestanding, guyed, or on a building or other structure. This definition also included structures supporting such equipment, <del>and attendant parking-, and small cell antenna structures.</del> <u>Small cell antenna structures includes an antenna, a structure designed to specifically support an antenna, and/or and appurtenances mounted on such a structure or antenna which is used or designed to be used, to provide wireless transmission of voice, data, images, or other information.</u></p>	<p>The current definition of telecommunications tower does not include the small cell equipment that is a recently introduced telecommunications design.</p>
TOPIC: Correction of section labeling	Reason for Change
<p><b>17.04.040 Public Hearing and Approval</b>  <b>A. Record of Testimony.</b> The review body or person responsible for conducting public hearings on the applications required under this ordinance shall make an accurate and complete record of all testimony and exhibits presented during the hearing. The Planning and Economic Development Director shall provide staff support for this responsibility.</p> <p><b>B. Findings of Fact.</b> After conclusion of the public hearing, the hearing body or person shall prepare a recommendation including findings of fact based on a review of the hearing record. The Planning and Economic Development Director shall provide staff support for this responsibility.</p> <p><b>C. Continuance of Public Hearings.</b> At the discretion of the hearing body or person, a public hearing may be continued. For public notice requirements in conjunction with continuances, see § 17.04.050 of this ordinance.</p> <p><b>D. Relay to Village Board.</b> The Planning and Economic Development Director shall relay the recommendation and findings of the hearing body or person to the Village Board without delay.</p> <p><b><del>GE.</del> Village Board Action.</b> The Village Board shall</p>	<p>The labeling of these sections is simply a scrivener's error.</p>

<p>act on the application within 90 days following the receipt of the recommendation of the hearing body or person, unless the petitioner agrees to an extension. The Village Board may grant or deny the application or grant with modification, or may refer the application back to the hearing body for further consideration.</p> <p><b>HF. Costs.</b> The applicant shall be responsible for the Village's costs associated with the public hearing, including public notice, consultant fees, recordation and preparation of the public hearing record, and services of a court reporter. In order to ensure payment, the Planning &amp; Economic Development Department shall require the establishment of an escrow account prior to the public hearing. The escrow amount shall be based on anticipated costs associated with the application. Action on the application may be withheld pending establishment of the account or reimbursement of Village costs associated with the public hearing. The escrow account requirement may be waived by the Planning and Economic Development Director.</p>	
<p><b>TOPIC: Change the provisions relating to storage of campers/RVs and trailers for non-residential districts and off street parking of vehicles, buses, and trucks.</b></p>	<p><b>Reason for Change</b></p>
<p><b>D. Restrictions</b></p> <ol style="list-style-type: none"> <li>1. Unenclosed off-street parking spaces shall not be used for the repair, dismantling or servicing of any vehicles, equipment, materials, or supplies.</li> <li>2. Inoperable vehicles shall not be parked or stored in unenclosed parking areas.</li> <li>3. <del>In R districts,</del> the parking of vehicles on areas of the front yard other than a driveway is prohibited.</li> <li>4. <del>Trucks and other commercial vehicles with "C" through "Z" license plates, trailers,</del></li> </ol>	<p>The current restrictions for parking vehicles in residential districts are not clear and the restrictions are contained in two different areas in the chapter. This adjustment will provide clarity.</p>

~~recreational vehicles, construction equipment, tractors and boats shall not be permitted to park or be stored in any residential district except when located in a garage that substantially conceals them from view. Temporary parking on driveways in residential lots is permitted for a maximum of eight consecutive hours or 12 hours within a 24 hour period. A limit of one commercial vehicle with a "B" license plate is permitted to be parked on a residential lot.~~

**17.10.100 Off-Street Parking of Commercial Vehicles, Buses, Trailers, Trucks, Construction Equipment, and Recreational Vehicles in Residential Districts**

~~A. It is illegal to park or store the vehicles listed in this paragraph A on any lot in a nonresidential zoning district, except when located in a garage or other fully enclosed structure that substantially conceals them from view, for more than four consecutive hours:~~

- ~~1. Trailer.~~
- ~~2. Tractor.~~
- ~~3. Trucks and other commercial vehicles with "C" through "Z" license plates, or the equivalent thereof issued by any jurisdiction.~~
- ~~4. Bus.~~
- ~~5. Construction equipment.~~
- ~~6. Any class of commercial motor vehicle where, in order to be lawfully operated, the operator must possess a valid commercial driver's license.~~

~~B. It shall be unlawful for a property owner to allow the parking on his/her lot for more than four consecutive hours any of the vehicles listed in~~

~~paragraph A of this section.~~

~~C. The parking of vehicles listed in paragraph A of this section shall be allowed:~~

- ~~1. When the property owner or the tenant of a shopping center consents to the parking of said vehicles in areas clearly designated, marked and used for off-street loading zones on lots that contain an active principal use; or~~
- ~~2. When the subject lot is within an M district which contains an active principal use; or~~
- ~~3. When the subject vehicle is engaged in work related to an active building construction or site development project occurring on the lot; or~~
- ~~4. When the subject vehicle is owned or operated by the owner of the lot or a tenant of the lot; or~~
- ~~5. When the subject vehicle is engaged in the delivery of goods or materials for a tenant on the lot; or~~
- ~~6. When the subject vehicles are school buses and they are parked on lots owned or leased by a school district; or~~
- ~~7. When the primary or accessory use of the lot or a business on the lot is truck, trailer, or construction equipment rental or sales and service.~~

**A. Prohibited Vehicles.** It is illegal to park or store the following vehicles on any lot in a residential zoning district, except when located in a garage or other fully enclosed structure that substantially conceals them from view, for more than eight consecutive hours or 12 hours within a 24-hour period:

1. Trucks and other commercial vehicles

with “D” through “Z” license plates, or the equivalent thereof issued by any jurisdiction;

2. Recreational Vehicles;

3. Construction Equipment;

4. Buses;

5. Trailers;

6. Tractors; and

7. Boats.

**B. Commercial Trucks, “B” Plate.** A maximum of one commercial vehicle with a “B” license plate is permitted to be parked on a residential lot in open view. Any other commercial vehicles with a “B” license plate shall be located in a garage or other fully enclosed structure that substantially conceals them from view.

**17.10.110 Off-Street Parking of Commercial Vehicles, Buses, Trailers, Trucks, Construction Equipment, and Recreational Vehicles in Non-residential Districts**

**A. Boats and Recreation Vehicles.** In non-residential districts, it is illegal to park or store boats or recreational vehicles for more than four hours unless within a fully enclosed structure that substantially conceals them from view. The following boat and recreational vehicle parking is exempt from this requirement:

1. When attendant to an active Boat/RV sales, service, or storage use; and

2. Parking or storage as permitted by 17.06.120.C.5.

**B. Buses.** In non-residential districts, it is illegal to park or store buses for more than four hours

Off-street parking requirements in non-residential districts allow for parking of vehicles that are prohibited in residential areas and are not associated with a permitted principal use. For example RVs cannot be stored in open air in residential district; however, currently they could be stored in a shopping center parking lot.

unless within a fully enclosed structure that substantially conceals them from view. The following bus parking is exempt from this requirement:

1. When the subject vehicles are school buses and they are parked on lots owned or leased by a school district; and

2. Parking or storage as permitted by 17.06.120.C.5.

**C. Construction Equipment.** In non-residential districts, it is illegal to park or store construction equipment for more than four hours unless within a fully enclosed structure that substantially conceals them from view. Parking of construction equipment engaged in work related to an active building construction or site development project occurring on the same lot on which the equipment is parked shall be exempt from this requirement. Parking or storage of construction equipment attendant to the following active principal uses shall be exempt from this requirement:

1. Construction Contractor Office with Yard;

2. Landscaping / Nursery;

3. Lumberyard; and

4. Heavy Equipment Sales and Service.

**D. Truck, Tractor, and Trailer Parking in B Districts.** In B Districts, it is illegal to park or store trucks, tractors, or trailers for more than four hours unless within a fully enclosed structure that substantially conceals them from view. The following truck parking is exempt from this requirement:

1. Trucks with “B” or “D” plates owned or operated by the owner or tenant of the lot and operated for the delivery of goods or materials in support of

<p><u>the active principal use on the lot;</u></p> <p><u>2.Parking or storage of tow trucks when such trucks are located on the same lot as, and are operated in support of, an active principal use within the Vehicle-Related Land Uses category of Table 17-06-01;</u></p> <p><u>3. Parking or storage as permitted by 17.06.120.C.5.; and</u></p> <p><u>4. Parking of semi-trailers at designated loading docks for a period not to exceed 24 hours.</u></p>	
<p><b>TOPIC: Sidewalk construction</b></p>	<p><b>Reason for Change</b></p>
<p><b>17.26.110.K2 Installation Requirements</b>          For base preparation, a four-inch minimum of CA-6 curb base course shall be provided. The base course shall be trimmed or filled as necessary to provide a full depth of curb and gutter as shown in detail LS-2 of this chapter. (Detail sheets are found at the end of this chapter.) Prior to the concrete placement, in accordance with the testing and acceptance requirements indicated below. A <del>two</del> <u>four</u>-inch minimum CA-6 sidewalk base course shall be provided. Sidewalk subgrade shall be tamped or rolled until thoroughly compacted.</p>	<p>The section indicates the incorrect standard for a sidewalk base course.</p>
<p><b>TOPIC: Natural Guidelines for natural areas establishment and locational requirements for stormwater detention facilities</b></p>	<p><b>Reason for Change</b></p>
<p><b>17.29.020 Design Standards</b></p> <p><b>G. Naturalized Detention</b>          Naturalized detention basins are encouraged. Naturalized detention is intended to serve multiple functions in addition to flood prevention, including to pollutant removal and creation of wildlife habitat (where appropriate). <del>Naturalized detention shall:</del> <u>The design and installation of naturalized detention facilities shall comply with the standards found in Appendix H titled “Native Plantings Guideline” adopted here in and are incorporated by reference.</u></p> <ol style="list-style-type: none"> <li><del>1. Use exclusively plants that are native to Illinois or the Midwest; and</del></li> <li><del>2. Be used in conjunction with a detailed planting</del></li> </ol>	<p>The UDO currently allows for naturalized detention basins; however, there are few specific requirements and it does not provide enough information for users to understand/ deign these basins and areas. Additionally the standards outlined in the proposed Appendix H are designed to achieve requirements from MWRD’s WMO.</p>

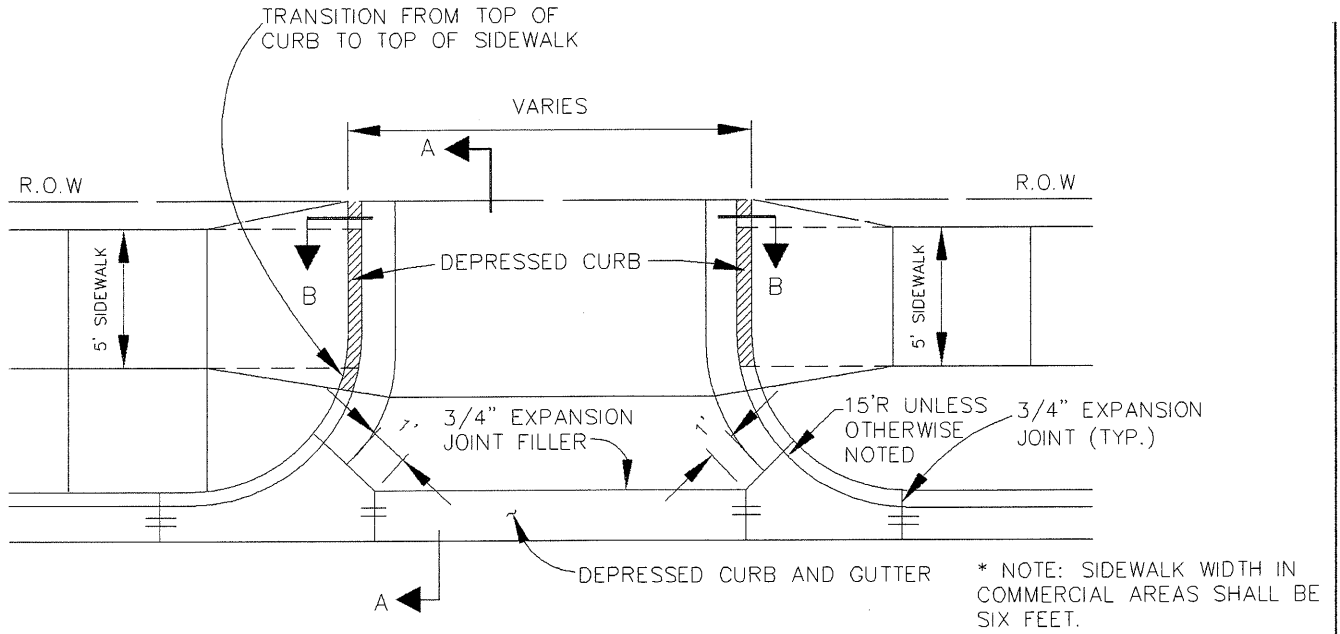
<p><del>schedule, including provisions for a two-year installation and plant establishment period, and provisions for stewardship of the basin.</del></p> <p><b><u>K. Locational Restrictions</u></b>  <u>When Detentions areas contain retaining walls, such detention areas shall only be:</u></p> <ol style="list-style-type: none"> <li><u>1. On privately owned and maintained properties;</u></li> <li><u>2. In only M-districts, B-districts, or the R-6 district; and</u></li> <li><u>3. In only the interior or rear yards.</u></li> </ol>	<p>These restrictions prevent unsightly detention areas from being located in highly visible areas.</p>
<p><b>TOPIC: Vehicle related uses as permitted or special uses</b></p>	<p><b>Reason for Change</b></p>
<p><b>Table 17.06.01 Permitted and Special Uses in the Zoning Districts</b></p> <p>Auto body and repair: change Downtown district from permitted use to a special use and change M-1 from a special use to a permitted use.</p> <p>Boat/RV sales, service, or service- alter B-3 district to a special use and M-1 as a permitted use.</p>	<p>Restricting auto body and repair in the downtown is to ensure additional administrative review of this use as the Downtown District contains a number of historic buildings and because the intended purpose of the DD is to serve as a pedestrian oriented retail/entertainment mixed use district. Auto body shops may have certain incompatibilities with achieving the intended purpose of the DD.</p> <p>These larger recreational vehicles and boats have a significant impact on the appearance of the site. Thus in commercial districts they should be special uses to allow for administrative review and additional screening on these sites. Allowing this use in the M-1 district is more suitable as the M-districts are not highly visible commercial areas.</p>



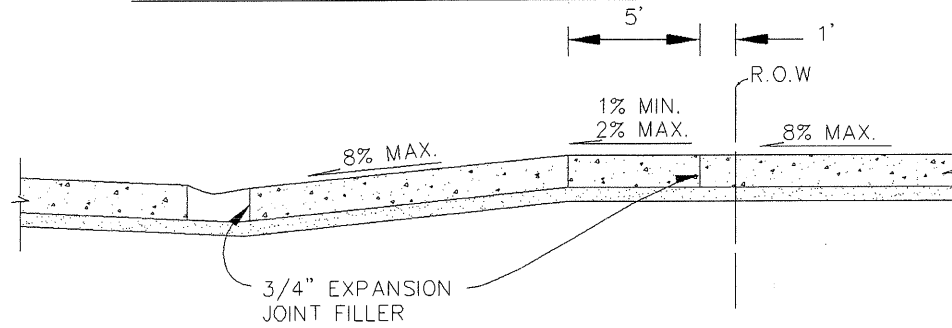
<p><b>TOPIC: IDOT and Cook County Highway Department Plat Certificates</b></p>	<p><b>Reason for Change</b></p>
<p><b>Appendix D Certificates for Plats</b>  D-16 Cook County Highway</p> <p>Cook County Department of Transportation and Highways Certificate</p> <p>The following certificate relates to the Cook County Department of Transportation and Highways entrance permit number _____</p> <p>STATE OF ILLINOIS)    )SS  COUNTY OF COOK )</p> <p>This plat has been approved by the Cook County Department of Transportation and Highways with respect to roadway access pursuant to 765 ILCS 205/2. However, a Highway Permit conforming to the standards of Cook County Department of Transportation and Highways is required by the owner of the property for this access.</p> <p>____ day of _____, _____</p> <p>_____  Superintendent of Transportation and Highways  Cook County, Illinois</p> <p>D-18 State of Illinois Highway</p> <p>This plat has been approved by the Illinois Department of Transportation with respect to roadway access pursuant of §2 of “An Act to revise the law in relation to plats,” as amended. A plan that meets the requirements contained in the Department’s “<u>Policy on Permits for Access Driveways to State Highways</u>” will</p> <p>_____  John A. Fortmann, P.E.  Deputy Director of Highways  Region One Engineer</p>	<p>Both Cook County Highway Department and IDOT have revised their plat certificates, thus the UDO must be updated accordingly.</p>

<b>TOPIC: Sidewalk construction</b>	<b>Reason for Change</b>
<p><b>Appendix G LS-5 Driveway Aprons and Alley Returns</b>                      (See Attachment 1)                          <u><b>LS-94 Street Sign</b></u>                      (See Attachment 2)</p>	<p>As stated previously the incorrect standard for a sidewalk base course are indicated.</p> <p>Currently the UDO does not contain standards for street signs.</p>
<b>TOPIC: Naturalize Areas Establishment Guide</b>	<b>Reason for Change</b>
<p><b><u>Appendix H Native Planting Guideline</u></b>                      (See Attachment 3)</p>	<p>The UDO currently allows for naturalized detention basins; however, there are few specific requirements and it does not provide enough information for users to understand/ deign these basins and areas. Additionally the standards outlined in the proposed Appendix H are designed to achieve requirements from MWRD's WMO.</p>

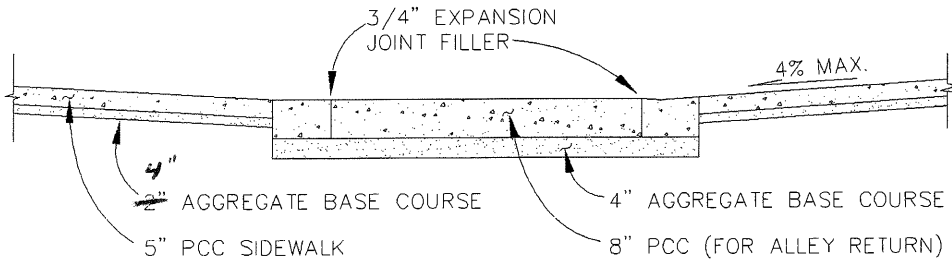
# Attachment 1



## TYPICAL DRIVEWAY APRON AND ALLEY RETURN



SECTION A-A



SECTION B-B

\* SEE STANDARD LS 6 RESIDENTIAL FOR DRIVEWAY PAVEMENT COMPOSITION

VILLAGE OF LEMONT		
DRIVEWAY APRONS AND ALLEY RETURNS		
12/10/01	NO. LS-5	REV. 2

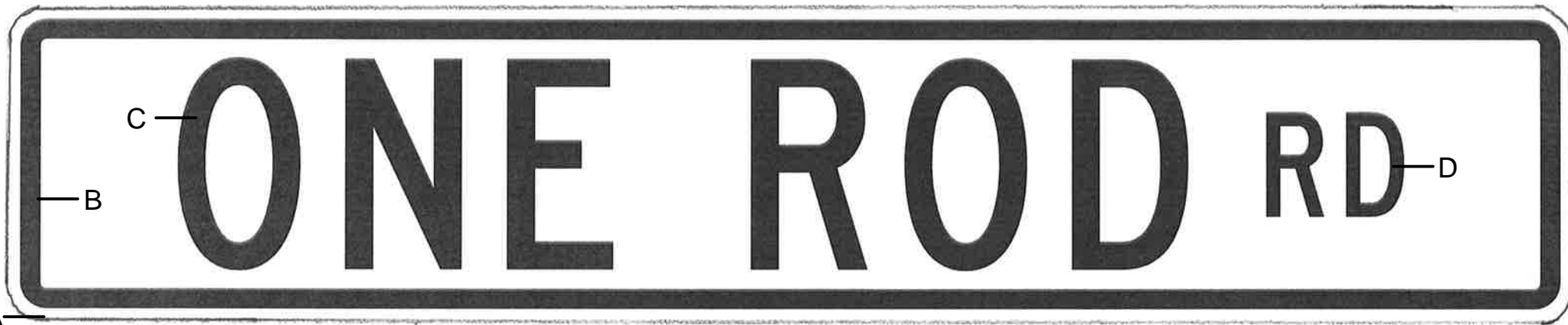
Sign size can be 6"x24", 6"x30", 6"x36" (size should be proportionate to street name)

Background material: High intensity grade prismatic reflective sheeting in white.

Letters and inside border are vinyl in black.

Sign blank is made of flat sheet aluminum .100 gauge.

All letters are in CAPS



A - Outside border = 1/4"

B - Inside border = 3/8"

C = Street name letters = 4"

D - Street type letters = 2"



## Native Planting Guideline

A resource for developers and residents who wish to incorporate native plantings into their property.

Village of Lemont

630-257-1550

To download a full copy of this guideline visit:

[www.lemont.il.us](http://www.lemont.il.us)

# Purpose of the NATIVE PLANTING Guideline

The Native Planting Guideline is a resource for developers and residents who wish to establish native plantings on their properties. The document has been developed by the Village of Lemont in consultation with professional ecological restoration practitioners using insight and practical knowledge regarding the design, implementation, and management of native plant communities and their associated ecosystems. It is intended to provide:

**Education of Developers & Residents** – Native plantings are not traditional landscapes — their design, installation, and maintenance follow scientific processes and can be complicated — they require understanding and patience. This document will inform individuals on why native plantings are important, set realistic expectations during their development, and present best practices for designing, installing, and maintaining them. It will also outline and discuss monitoring efforts that are critical to the successful establishment of native plantings.

**Efficiency in Review** - By providing these guidelines, the Village of Lemont is setting a minimum standard for the design, installation, and management of natural areas and native plantings whenever used throughout the Village. This will lead to a more consistent plan review process for developers and sets basic expectations for native plantings consistent with the intent of the current landscape ordinance. The goal is to set realistic expectations, reduce plan review costs, and improve the environment in an aesthetically positive way.

**Higher Quality Natural Areas** – Native planting areas that are constructed with a knowledgeable and comprehensive plan for installation and management are much more valuable to the owners and to the community. This guideline provides developers and residents proven methodology regarding the establishment and ongoing management of high quality native plantings that provide long-term functionality with positive aesthetics.

**More Natural Areas** - All Village residents benefit when degraded natural areas are restored to good health and when underutilized open space is converted to native plants. The Village encourages developers and residents to implement native plantings wherever possible. The Native Planting Guideline provides a knowledge base that will help get projects off the ground.

## Why Use Native Plants?

Plants are one of the only organisms on earth that can convert the sun's energy into a form of energy the rest of the planet can use and are the basis of most life on Earth. However, many of our native insects cannot eat plants that have been introduced from Asia or Europe and therefore rely on our native plants in order to survive. The remaining food chain relies on this interaction. Native plants form the foundation of our Midwestern ecosystem. They are uniquely American!

- N**OT LANDSCAPING  
There is an entire industry focused on the design installation and maintenance of native plantings. Make sure you hire qualified help.
- A**ESTHETICS MATTER  
When designed, installed, and maintained correctly, native plantings look good and add significant value to our community.
- T**IMING IS EVERYTHING  
Native plantings can take three to five years to fully establish and begin flowering. Patience and diligence is required. It's worth the wait!
- I**T'S NOT MAINTENANCE FREE  
Often native plantings are wrongly touted as "maintenance free." Once established they are low maintenance but do require care in perpetuity.
- V**ALUE NATURE  
Take time to learn about the many benefits native plants provide to our environment. Once they become valued, acceptance often follows.
- E**DUCATE YOUR NEIGHBORS  
Don't let your knowledge about native plants end here. Continue to learn and talk with your neighbors to help them understand their value.
- S**HARE YOUR STORY  
Too often we hear about the "weed patches" instead of the good plantings. When you've attained success by following these guidelines, share your story!



## CONTENTS:

### **SECTION 1**

Natural Areas Applications

### **SECTION 2**

Design Criteria

### **SECTION 3**

Construction & Planting Guidelines

### **SECTION 4**

Maintenance Guidelines

### **SECTION 5**

Performance Criteria & Monitoring

## **APPENDICES**

- A: Native Seed and Plant Mixes
- B: Contact Information for  
Local Professional Natural Areas Contractors
- C: Contact Information for  
Regional Native Plant & Seed Suppliers
- D: Invasive Species List
- E: Maintenance Schedules
- F: Submittal Checklist
- G: Examples of Installations
- H: References & Additional  
Information

### Using the Guideline and Enforcement

This document is to be used as a supplement to the established codes and ordinances of the Village of Lemont. The Village encourages the use of native plantings by residents and developers. Whenever native planting projects subject to Village codes and ordinances are implemented this document shall be utilized as the minimum acceptable standard. Native plantings not conforming to this guideline may be subject to the same enforcement tools as outlined in the Village's Landscape Ordinance.





SECTION

# 1

## APPLICATIONS FOR NATIVE PLANTINGS

Native plantings provide numerous benefits for your property, your neighborhood and the larger community. This section will outline which applications are best suited for the incorporation of native plantings and how they can deliver ideal solutions to common development challenges.

## 1.01 Stormwater Management

Historically, when rain fell on the virgin prairies and forested land in Illinois the water soaked into the soft rich soils (referred to as “pervious” surfaces) and emerged slowly into wetlands, creeks, and rivers as cool, clean groundwater. As humans began to alter the landscape through the construction of buildings, roads, and compacted lawns (referred to as “impervious” surfaces), larger and larger amounts of rain water would be diverted directly into water bodies at increasingly rapid rates resulting in regularly occurring localized and downstream flooding (Figure 1-2). In response to human-induced flooding, engineers began to address it by implementing stormwater management techniques into new development. These techniques centered on the temporary impoundment of rainwater in a basin or pond and using an appropriately-sized pipe to release the water downstream at a much slower rate than it would have moved off site without the basin in place. See Figures 1-3 and 1-4 for a diagram of the two types of basins and how they work. This approach to stormwater management has proven effective in reducing the frequency and severity of flood events, however in recent years the focus has shifted to improving the quality of the water moving off site in addition to controlling the quantity of water.

**It is important for residents and developers to understand that the overwhelming majority of “ponds” within the Village of Lemont are actually “retention basins” and are part of a stormwater management system.**

A tool used by engineers to predict and document the volume of water and the duration of its presence is a storm hydrograph. Hydrographs communicate the normal water level and the peak levels during particular storm events. See Appendix G for further explanation of hydrographs.

These water quality techniques are referred to as “Best Management Practices” (BMPs) and can be defined as environmentally-positive and effective stormwater treatment techniques to promote water infiltration into the soil and improve overall water quality. To achieve this, these systems rely on specialized soils, plants, and/or natural processes (naturally occurring bacteria and fungi in productive soils) to provide erosion control and reduce sedimentation, to remove nutrients from the water, and to create pervious surfaces that soak more water into the ground rather than allowing it to flow off the site. Most BMPs are designed to capture, filter, and treat the low intensity, high frequency rain events and/or the “first flush,” which is typically the first ½” of any rain event and

carries a majority of the pollutants washed away from roads and lawns.

The integration of native plants into BMPs dramatically improves their effectiveness. Roots of native plants reach deep into soil (sometimes upwards of fifteen feet, see Figure 1-1) and each year approximately 25% of their root system dies off and becomes organic matter. When the roots decay they leave porous holes or tunnels which aerate the soil, provide steady soil drainage, and increase the soil’s ability to absorb and hold water. The main result is that more stormwater is cleaned by natural processes and percolates through the soil. When compared to native plants, turf grass provides a fraction of the root mass (4-6” deep) and will not provide the multiple benefits afforded by native plants.

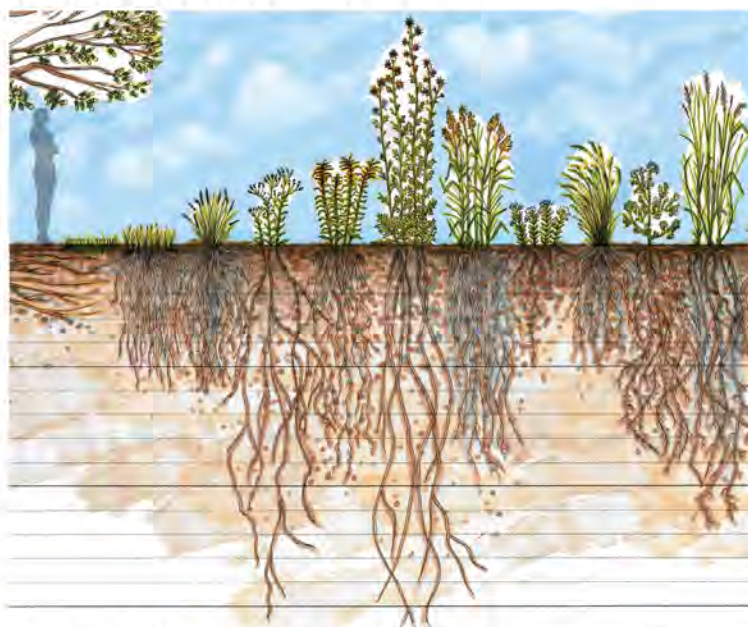


Figure 1-1: Native plant root drawing

Following is a description of some common BMPs for water quality improvement and how native plantings improve their function:

### 1.01.01 Naturalized Stormwater Basins

A. **Erosion Control** - Since their inception in the 1970s, stormwater basins have typically been planted with turf grass. It was quickly realized that turf grass was not suited to grow in wet soil conditions and the shallow root systems could not adequately withstand the erosive forces of water and ice which commonly give way to significant soil erosion (Figure 1-5). The traditional response to shoreline erosion is to install stone along the water’s edge. This is both an expensive and temporary application as stone requires its own level of maintenance, repairs, and replacement over time (Figure 1-6). Alternatively, installing the appropriate

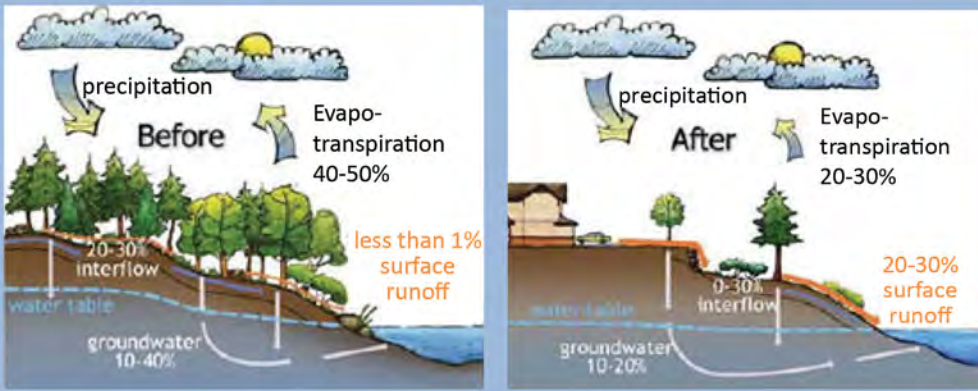


Figure 1-2: Before development almost all rainfall is taken up by plants, evaporates or infiltrates through the ground. After conventional development, surface runoff increases significantly while evaporation and infiltration into the ground decrease. Images courtesy of Puget Sound Partnership.

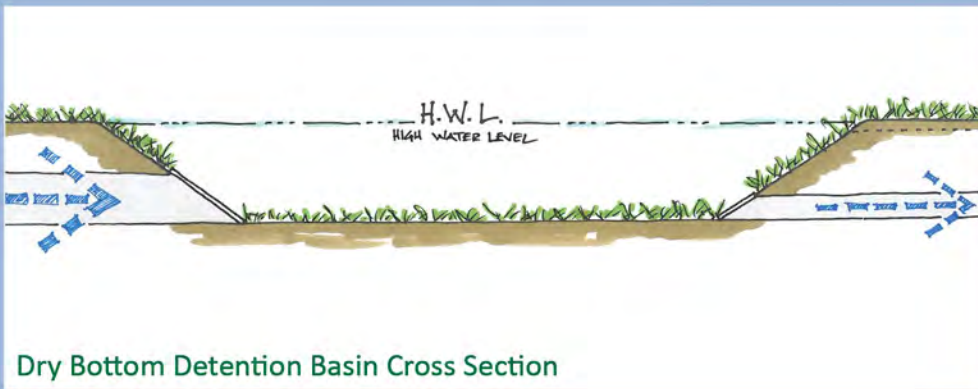


Figure 1-3: Dry bottom detention basins only occasionally hold water for a set period of time. Understanding the frequency and duration of water present will help develop your plant pallet.

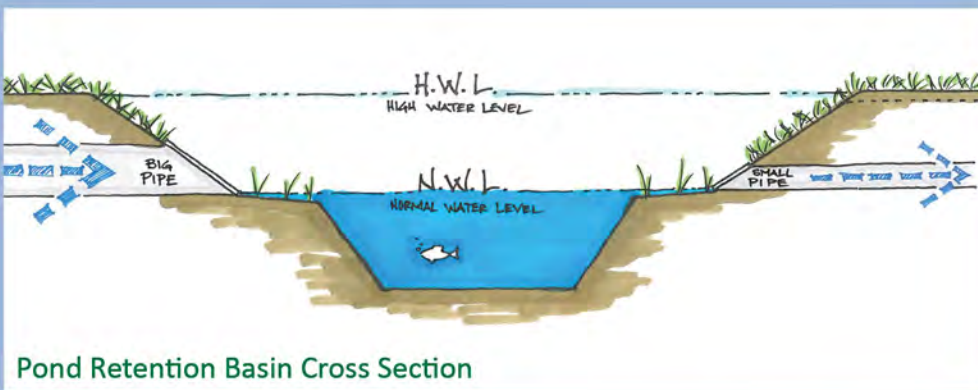


Figure 1-4: A pond retention basin always has water present but is designed to hold more water during a storm event. Native plants aid in bank stabilization and keeping the water clear.



Figure 1-5: Erosion along basin edge



Figure 1-6: Costly and unsightly rip rap stone along basin edge

native plants that evolved in a wet soil condition and have extensive, deep root systems locks shoreline soils in place. They also provide high quality habitat that will support healthy populations of dragonflies, frogs, and fish, which in turn attract Blue Herons, Great Egrets, and other beautiful birds.

1. In some cases stone may be required to prevent erosion and can be combined with native plants in an aesthetic manner. Examples of situations that may require the use of stone include where overland flows are highly concentrated or on north/northeast shorelines of very large ponds where significant wave action is generated by prevailing winds
- B. **Goose Control** - Ponds with mown lawn also invite large populations of Canada Geese who love easy access to water and feel secure being able to see potential predators for long distances. Geese can be aggressive toward humans, increase erosion by eating turf grass down to the roots, and leave large amounts of fecal matter all over walkways and in the pond. High levels of fecal matter in the water can also cause significant human health concerns. By incorporating native plantings that are three or four feet in height around their ponds, property owners can deter large populations of geese from their property (Figure 1-7).
- C. **Algae Control** - Lawn and rock-lined ponds often display unsightly algae blooms during the summer months. Algae growth is regulated by nutrient availability in the water (especially phosphorus) and water temperature. Fertilizers used on the lawn surrounding a stormwater basin ultimately end up in the pond. Fertilizers applied to a resident's lawn wash into the street, then into the storm sewer, and ultimately end up in the pond. Warm water washing from hot roads and rooftops enter the pond during rain events. Shallow water areas of a pond, such as the "safety shelf" (Figure 2-3) warm quickly in the summer sun. Algae uses nutrients from the fertilizer and the warmed water to reproduce at aggressive rates. By utilizing native plants around a pond many of the nutrients from fertilizers get used up by the plantings and as they grow in the shallow water areas they shade the water and reduce temperatures, reducing or eliminating algae growth. Algae growth can be reduced further if stormwater, specifically that water coming from highly fertilized residential lawns, is filtered through an additional BMP prior to entering the main pond. The use of several BMPs together to maximize filtration, infiltration, and overall water quality is typically referred to as a "Treatment Train."
1. The installation of fountains in a pond is sometimes suggested as a solution for algae growth. While fountains

can help improve the overall health of the pond and aid in the decomposition of dead plant material in the pond (dead algae, dead plants, leaves, etc.), they often do little to prevent algae blooms from forming (Figure 1-8) because algae growth is tied to nutrient loads and water temperature. Fountains typically require a significant monetary investment upfront and will incur ongoing maintenance and operational costs. If you have an algae problem in your pond, make sure to understand the root cause and formulate an effective solution before investing limited resources.

#### 1.01.02 Bioswales

Bioswales are a type of BMP characterized by a depressed area located along side or within an area of pavement (such as a parking lot) that are designed to collect and convey stormwater from one point to another while filtering and increasing percolation of water into the ground. They may use native or engineered soils and native plants. Depending upon the design requirements of the engineer, they may also include an underdrain installed below the soil complex to ensure that the system does not retain water for long periods of time (Figure 1-17)

#### 1.01.03 Rain Gardens and Bioinfiltration Basins

BMPs characterized by shallow to deep depressed areas and are designed solely to infiltrate and percolate water into the ground (no conveyance) are typically referred to as rain gardens (typically small) or bioinfiltration basins (typically large). These systems use either native or engineered soils and native plants to treat and infiltrate the low intensity, high frequency rain events. Again, the design engineer may include an underdrain below the main soil complex to ensure that the system does not retain water for long periods of time.

#### 1.01.04 Other

There are many other BMPs that can be implemented that may or may not incorporate native plantings but are focused on capturing and treating small, frequent rain events to encourage infiltration. For example, rock check dams can be installed within swales or the bottom of dry-bottom detention basins designed to temporarily hold back or slow down small amounts of water so that sediments and nutrients can settle out of the water prior to being released downstream (Figure 1-9). The Village encourages all residents and developers to implement stormwater Best Management Practices wherever practical at their property.



Figure 1-7: Native plantings hinder geese



Figure 1-8: Algae persists with fountains



Figure 1-9: Rock check damn

## 1.02 Open Space

When most people hear the words “open space,” they may first think of national or state parks, forest preserves, or public parks. But consider that we each have a little bit of open space in our yards and most subdivisions have commonly controlled open space that is collectively “owned” and managed by the residents of that development, which usually includes stormwater facilities. These are all areas in which the Village encourages the incorporation of native plantings or the restoration of degraded natural areas that may already exist. Naturalizing our open spaces provides needed habitat for birds and butterflies, rebuilds soil, and encourages water percolation that can help relieve flooding, reduces the need for costly and dangerous fertilizers, eliminates the use of precious clean water for irrigation, reduces maintenance costs, and preserves our connection with the natural world. Following is a description of the main types of natural areas found in the Lemont area, these systems can be modeled when establishing native plants in an open space.

### 1.02.01 Woodlands

Populated with trees, woodlands can be sparse or they can be very dense. Historically, most of the land that comprises the Village of Lemont would have been woodland dominated by moderately spaced oak species with little brush understory (Figure 1-10 – Plat Map). In addition to trees overhead, the ground would have been lush with sedges, grasses, and wildflowers. Unfortunately many of our remaining woodlands have become crowded with lower quality secondary growth species and infestations of invasive species, such as honeysuckle and buckthorn. The amount of shade produced by the additional trees and non-native brush prevents healthy oak regeneration and suppresses, or even eliminates, the once lush forest floor. By removing invasive brush, thinning low-quality trees, installing native species, and beginning an ongoing management strategy the community can once again breathe life back into our wooded open spaces.

High quality woodlands not only harbor rare native flora and fauna, they also provide unique recreational opportunities for people. With the help of signage and trails, a woodland that may be underused by the community can become an educational and relaxing attraction for residents and visitors, contributing to overall quality of life (Figure 1-11).

### 1.02.02 Prairies

French for “meadow,” a prairie is a relatively flat, highly diverse, open grassland devoid of trees (Figure 1-13). Mostly

comprised of grasses, sedges, and wildflowers, prairies were common throughout the Midwest but were not historically a dominant land cover throughout the Village of Lemont (Figure 1-10 – Plat Map). Prairies are a unique ecosystem where they do occur, with plants that have evolved over time to become resilient to a wide range of temperature fluctuations and rainfall variations. Their deep roots allow the plants to endure fires that would regularly sweep the plains, drought conditions that periodically occur in the Midwest, and harsh winters. These deep root systems are directly responsible for the development of the rich, highly organic soils that are so productive in Illinois. Because of their soil productivity, less than one-half of one percent of the original prairies in Illinois escaped conversion to crop land. By converting underused lawn to prairie and using prairie plants in our stormwater facilities, the community can replicate the highly productive systems of the past within our open spaces.

It takes about three years of growth for a newly planted prairie landscape to become established. Prairie landscapes create beautiful vistas, attract butterflies and birds, don't require irrigation, and are typically much less costly to maintain than traditional turf grass. Ongoing management of prairies are required in perpetuity in order to keep the system healthy with a pleasant aesthetic.

### 1.02.03 Wetlands

Wetlands are some of the most beneficial ecosystems in the world and have been proven to increase water quality, provide habitat for a large number of plant and animal species, and reduce flooding or the damage caused by flooding. They are areas where water covers the soil or is present just beneath the soil. They occur in both wooded and open areas (Figure 1-14). Long periods of inundation create specialized habitats in which certain plants and animals evolved and adapted to wet soil and standing water conditions. Historically, within the Village of Lemont wetlands would have been common along the Des Plaines River and occasionally found elsewhere (Figure 1-10 – Plat Map).

Many of our wetland areas today have been overrun with invasive species that originated in Asia or Europe, such as Reed Canary Grass or Common Reed (Figure 1-15). By restoring or creating natural wetlands using native plants we can create much needed specialized habitat, decrease flood damage and improve water quality before it enters our rivers and streams.

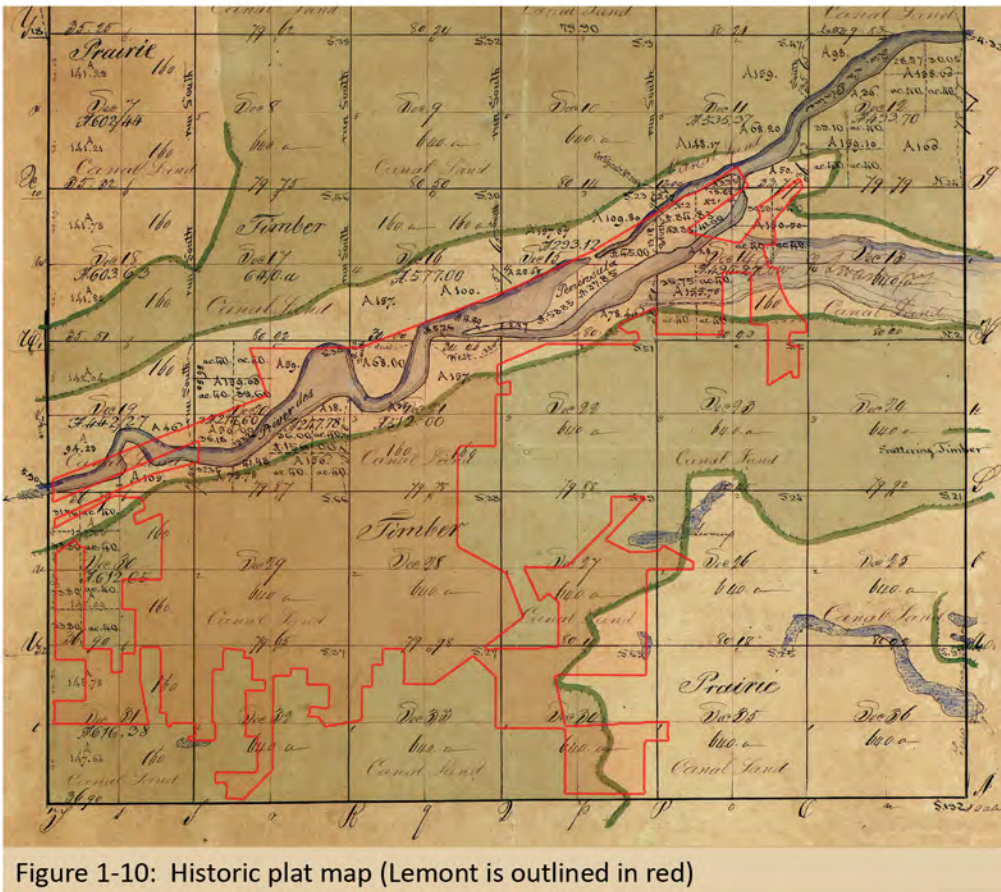


Figure 1-10: Historic plat map (Lemont is outlined in red)

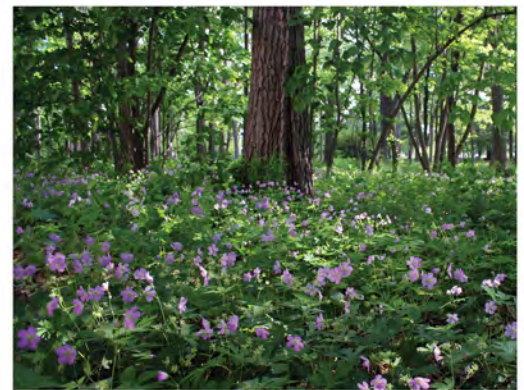


Figure 1-11: Native Woodland



Figure 1-12: Path Through a Native Woodland



Figure 1-13: Restored Native Prairie



Figure 1-14: Restored Native Wetland



Figure 1-15: Invasive Reed Canary Grass



### 1.03 Native Landscapes

Native plants are not only found in natural areas; they are commonly used within designed landscapes around corporate buildings, in a public parks, and in residential landscapes. Through their evolution in the Midwest, they have the genetic makeup to withstand our climate, without the use of pesticides and fertilizers and with little to no irrigation. If low maintenance is what you desire, native plants are the way to go.

Whether you have several acres of open space or a smaller residential lot within the Village, incorporating native plants is not a difficult task. You may be surprised to learn that many native species are available at your local garden center (Figure 1-16). If you're a hobby gardener it's likely that you have at least one species of native plant in your garden already! If you are looking to add native plants to your garden, it may be as simple as choosing a black-eyed Susan at the garden center instead of a daylily to spruce up an existing flower bed. Native plants can either be incorporated into a bed of existing flowers or can stand alone as a native garden. They create seasonal interest including flowers, fruits, fall color, and winter structure, while providing habitat and food for butterflies, bees, birds, and more.

If your project has a problematic wet spot, add native plants such as swamp milkweed or southern blue flag iris to create a rain garden that will look great and thrive in the soggy conditions. If deer have developed a liking for nibbling on your landscape plants, consider using native species such as purple coneflower and side oats grama — both resist deer browsing.

**Many common challenges or constraints that sites face can be resolved through the use of native plants.**

#### 1.03.01 Buffalo Grass

Native plants can even be used to replace turf. Buffalo grass (Figure 1-17), a low-growing plant native to the Midwest, requires much less water than traditional Kentucky blue grass. Buffalo grass will stay six to eight inches at its mature height and can be mown once a month if a more manicured look is desired. It is a warm season grass that will require no irrigation, reduced amounts of fertilizer, and less mowing. Buffalo grass also has roots that reach up to 15 feet deep and will help with erosion and water percolation. Following are a few tips to ensure your Buffalo Grass lawn establishes and flourishes:

A. Use a cold-hardy cultivar of buffalo grass, such as

'Bowie'

- B. Buffalo grass will perform best in a location that receives 6 hours of sunlight throughout the day and has moderately dry to very dry soil conditions.
- C. Many suppliers of buffalo grass sell it for pasture planting and recommend a very low seeding rate. If establishing a lawn, use 100-150 lbs of seed per acre being seeded.
- D. Buffalo grass is a warm season grass, which means it likes soil temperatures of at least 60-70 degrees and should be planted between June – August. In Lemont, it is not recommended to seed Buffalo Grass later than August. This is completely opposite of traditional Bluegrass or Fescue, both of which are cool season grasses typically planted in early spring or late fall.
- E. Prepare the soil just as you would for a traditional lawn seeding, including a light application of gypsum and starter fertilizer.
- F. For best results, cover the seeded area with a single-net straw erosion control blanket.
- G. Apply water to the seeded area once in the morning and once in the evening for a 3-4 week period.





*Asclepias tuberosa*  
Butterfly Weed



*Aster novae-angliae* 'Purple Dome'  
New England Aster



*Echinacea purpurea* 'Magnus'  
Purple Coneflower



*Liatris spicata* 'Kobold'  
Marsh Blazing Star



*Monarda fistulosa*  
Bee Balm



*Panicum virgatum*  
Switchgrass



*Penstemon digitalis*  
Foxglove Beardtongue



*Rudbeckia fulgida*  
Showy Black-Eyed Susan



*Schizachyrium scoparium*  
Little Bluestem



*Sporobolus heterolepis*  
Prairie Dropseed

Figure 1-16: Common Native Plants for Landscape Applications



Figure 1-17: Native Buffalo Grass Lawn





SECTION

# 2

## DESIGN CRITERIA

Successful establishment of native plantings requires regulatory compliance, ensuring that the right species are specified for the right location, utilization of quality products, and hiring experienced contractors. In effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the baseline design criteria that should be followed when planning a native planting project.

### 2.01 General Requirements

The Village must review and approve all proposed native planting plans for new development within the Village. For plan review purposes, a submittal checklist has been developed to summarize plan requirements for native planting plans, refer to Appendix E.

#### 2.01.01 Requirements by the Ordinance

Required design criteria are described in the Village of Lemont Unified Development Ordinance. This document outlines the strategies in which to conform to those requirements using native plant species.

Please refer to these documents for specific requirements:

#### Lemont Unified Development Ordinance

- A. Chapter 17.20 Landscaping and Tree Preservation, Section 17.20.080 Landscape Standards for Detention Ponds
- B. Chapter 17.24 Soil Erosion and Sedimentation Control
- C. Chapter 17.29 Storm Water Management, Section 17.29.020 Design Standards

In addition to the Lemont Unified Development Ordinance, developments must also conform to all Federal, State, and County requirements. County stormwater regulations must be followed for all new development:

- D. Developments within Cook County: The Metropolitan Water Reclamation District of Greater Chicago (MWRDGC)
- E. Developments within DuPage County: DuPage County Department of Environmental Concerns (DEC)
- F. Developments within Will County: Will County Land Use Department (LUD)

#### 2.01.02 Sources of Supply – Native Seed & Plants

- A. Seed shall be purchased from sources specializing in native species. When available and economical, native seed and plant stock shall originate from sources within the same EPA Level III Ecoregion as the project site (Figure 2-1). If the specified species are not available from the same Ecoregion or are not economical to obtain, seed shall be obtained from an adjacent Ecoregion, preferably to the west or east, but no further than 350 miles from the project site unless otherwise approved by the VILLAGE.
- B. Seed supplier's facility shall have the capacity to maintain optimal conditions for seed viability and freshness, including but not limited to the ability to control temperature and humidity in each work area, from receiving through seed cleaning, processing, stock shelves and long-term storage.
- C. Seed not grown by the vendor must be clearly indicated

and accompanied by the name and address of the company which grew the seed.

- D. Proposed nursery(s) shall be approved by the VILLAGE **prior to commencing work.**

#### 2.01.03 Native Seed Quality

It is of critical importance to procure high-quality native seed for your project. Native seed is not the same as turf grass seed, which has been genetically modified and perfected for enhanced germination. Native seed is grown naturally, collected in many cases by hand, and processed according to species. If this process is done incorrectly or if the seed is not stored appropriately, it can quickly go from good viable seed to dead seed that may never germinate. Using the following minimum standards for seed quality will eliminate one of the many pitfalls to successful establishment of native plantings. Keep in mind that there is typically a difference in price between good viable native seed and bad native seed. However, even though quality seed may cost a bit more in the beginning, the investment typically saves money over the life of the project by reducing or eliminating the need to re-seed and by establishing more quickly providing competition for weeds (Figures 2-2 and 2-3).

- A. Standards:
  1. All seeds shall comply with the Federal Seed Act.
  2. All seeds shall be of straight species. No horticultural varieties shall be acceptable.
- B. Natural Areas Contractor shall provide a fresh clean crop of the specified seed species. All native seed supplied shall be from seed lots tested by a qualified seed testing laboratory. Certificates for each lot of each species tested must be supplied to the Owner/Owner's Representative directly from the testing laboratory. Seed test results shall be dated no more than 12 months prior to the anticipated seed installation date.
- C. "Bearded" forb species seed (*Symphytichum*, *Solidago*, *Liatris*, etc.) shall be provided as depluffed/debearded seed. Legumes (*Dalea*, *Lespedeza*, *Desmodium*, etc.) shall be provided as de-hulled seed.
- D. All native seed shall be provided on a pure live seed (PLS) basis. Actual seed amounts used on the project will vary with the actual percent of PLS in the seed lot. Seed supplied to the site shall contain documentation of PLS testing and, if required, adjustment of the seed weights to provide 100% PLS standards. If rounding is required during PLS adjustment calculations, the adjustment shall always be rounded up. PLS adjustment must be based on seed test results dated no more than 12 months prior to the anticipated seed installation date. Minimum PLS percentage for any species shall be 70%.

### Level III Ecoregions of the Continental United States

(Revised April 2013)  
National Health and Environmental Effects Research Laboratory  
U.S. Environmental Protection Agency

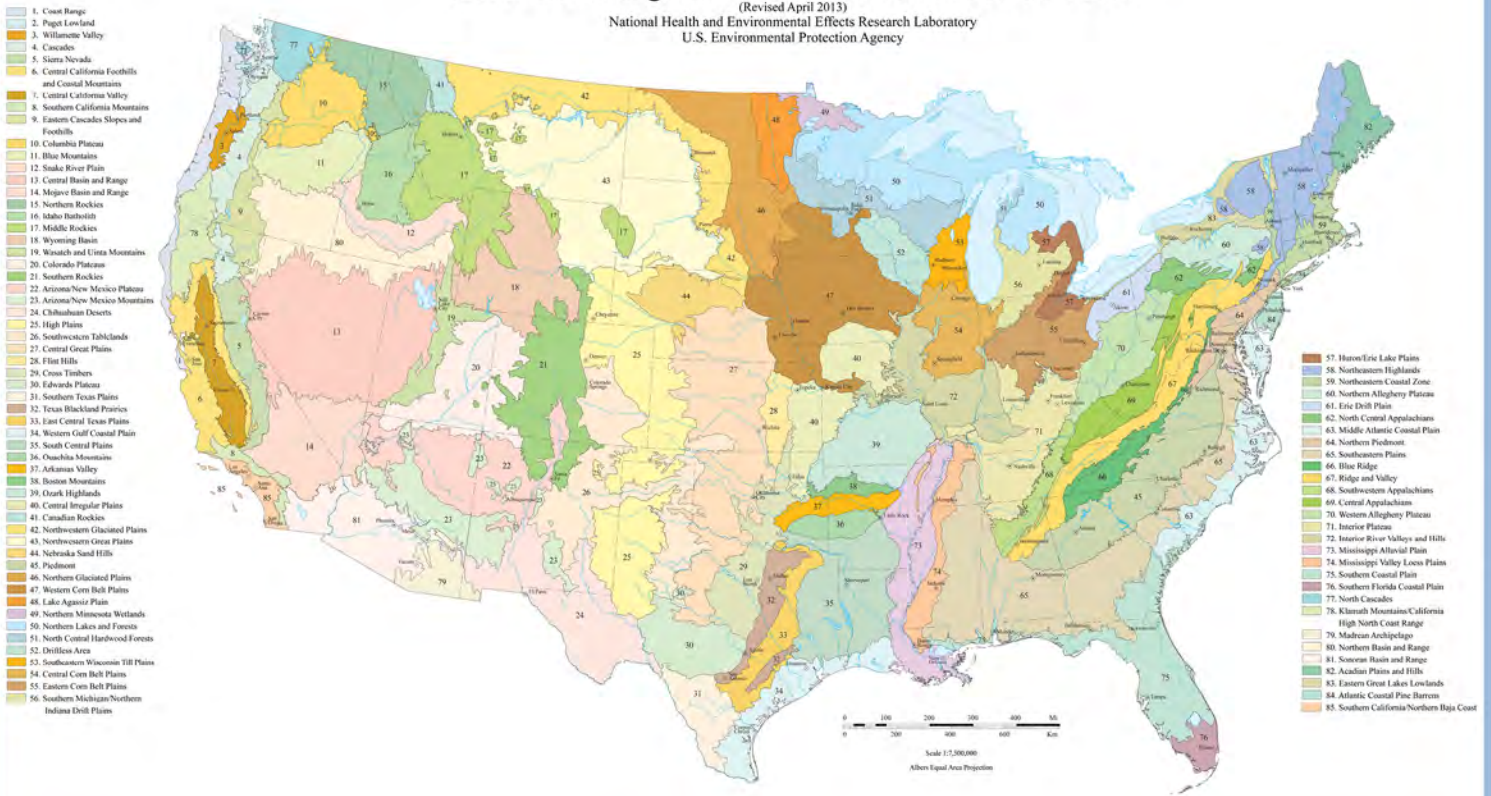


Figure 2-1: Map of the Ecoregions of the United States - This map illustrates the division of ecosystems that contain specific species, natural communities, and climate. Part of Illinois is in region 251, while the Cook, DuPage, and Will counties are within the 222 region.



Figure 2-2: Low Quality Native Seeding



Figure 2-3: High Quality Native Seeding

Figures 2-2 & 2-3: There is a vast difference in seed quality and rates between installation companies. It is recommended to specify the minimum standards in this section to ensure a successful installation with appropriate seeding rates and quality criteria.





Figure 2-4: Native Seed to be Mixed On Site



Figure 2-5: Sealed Native Seed Bags



Figure 2-6: Necessary Seed Label Information

- E. Seed containing noxious weeds will not be accepted. Seed containing weed seed in excess of 0.5% will not be accepted. Seed collected from the wild will not be accepted. It is a violation of the law to disturb, injure, or collect any plant on a national wildlife refuge or state nature preserve without a permit.
- F. When required, seed shall be appropriately stratified prior to installation, specifically species requiring scarification. If the project has been designed for a dormant seed installation using a “stratification seed mix” and the Natural Areas Contractor misses the optimal installation timeframe, they shall artificially stratify any seed species identified as requiring stratification prior to installation at no additional cost to the Owner.
- G. All seed shall be shipped in single species containers directly from the supplier and shall be mixed at the time of planting by the Natural Areas Contractor (Figure 2-4). At no time shall seed species be mixed by the supplier unless approved in writing by the Owner/Owner’s Representative.
- H. All seed shall be furnished in sealed containers (Figure 2-5). Seed that has become wet (unless as properly intended as a result of stratification), moldy, or otherwise damaged in transit or storage will not be acceptable.
- I. Seed packaging shall be legibly tagged as to supplier name and address, project name, seed mix name, species scientific name, species common name, lot number, specified quantity (adjusted for acreage), and PLS adjusted quantity (adjusted for acreage), refer to Figure 2-6. Seed stock shall be true to species as specified in this document or as approved in writing by the Owner/Owner’s Representative.
- J. All native seed mixes will be accompanied by a cover crop consisting of *Avena sativa* (seed oats) at a rate of forty (40) pounds per acre with spring planting or ReGreen™ (wheat x wheatgrass hybrid) cover crop at a rate of fifty (50) pounds per acre for fall plantings. **The cover crop shall be the only non-native species planted!** The Owner/Owner’s Representative may approve the deletion of the cover crop as a result of site conditions.
- K. All native seed mixes will be accompanied by a granular form of endomycorrhizal inoculum at a minimum rate of forty (40) pounds per acre and rhizobia inoculum for the appropriate plant species at rates recommended by the native plant nursery. Natural Areas Contractor shall provide proof that the mycorrhizal inoculum utilized contains a majority of live spores.

2.01.04 Native Plant Quality

A. Standards:

- 1. All plant materials, methods, etc. are to conform to the Standards of the American Association for Nursery Stock (ANSI Z60.1-2004). In the event there is a discrepancy between ANSI standards and this document, the most restrictive requirement shall govern. Following are acceptable standards for native herbaceous perennials in the sizes as specified:
  - a. **2” Potted Material** – provided in single-form factor plug trays that are configured to grow plugs at least 2” in diameter/square by 4-1/2” deep (minimum 11.3 in<sup>3</sup> dry soil volume), unless otherwise noted in this document or as approved in writing by the Owner/Owner’s Representative (Figure 2-7).
  - b. **1 Quart Material** – provided in thermo- or vacuum-formed pots that are at least 4” diameter/square by 4-3/4” deep (minimum 57.8 in<sup>3</sup> dry soil volume), unless otherwise note in this document or as approved in writing by the Owner/Owner’s Representative.

- c. **#1 Container Material** – provided in thermo- or vacuum-formed pots that are at least 5-1/2" in diameter/square by 5-1/2" deep (minimum 115.5 in<sup>3</sup> dry soil volume), unless otherwise noted in this document or as approved in writing by the Owner/Owner's Representative.
- 2. All plants shall be of straight species. No horticultural varieties shall be acceptable unless otherwise approved by the Village.
- B. Live plant containers shall be legibly tagged as to name and size of container and shall be true to species as specified in this document.
- C. All live plants shall be alive, healthy, hydrated, and in a vigorous growing condition at the time of delivery.
- D. All live plants will be inoculated with a broad-spectrum mycorrhizal fungi mix. All leguminous species must be inoculated with the proper strain of rhizobia inoculum.
- E. For ephemeral, emergent, submergent or other specific types of native species, bare root stock may be utilized upon written approval by the VILLAGE.
- F. Contractor shall provide written documentation to the Owner/Owner's Representative as to the source of supply, quantities, and species by scientific and common name of the live plants ordered prior to installation (e.g. supplier's invoice).

#### 2.01.05 Contractor Qualifications

Finding the right Natural Areas Contractor for your native planting project is another critical step in ensuring successful establishment. There is an entire industry focused on installing and maintaining native plantings. It is significantly different than traditional landscaping. The Village encourages developers to talk with several different contractors who specialize in natural areas work, check references, and take the time to go out and visit their projects. Make sure they do a quality job that meets your expectations; ultimately it is in your best interest that these native planting areas add value to your development, not detract from it. Quality contractors may cost a bit more but will typically stand behind their work and won't charge you for continued failures. They also tend to achieve final acceptance much more quickly than an inexperienced contractor, which should save money over the life of a project. To help you get started in the search for a qualified Natural Areas Contractor, the VILLAGE has provided some minimum criteria below.

- A. All work shall be performed by a Natural Areas Contractor with extensive documented experience in selective brush and tree clearing for the purposes of ecological restoration, native seeding, planting, and natural areas management, and shall be able to demonstrate their knowledge in the field.
  - 1. Because it can take 3-5 years before a natural area matures and can be determined a success or a failure, the VILLAGE highly recommends the use of Natural Areas Contractors having a minimum 5 years of experience and prefers at least 7 years of experience.
- B. Natural areas brush and tree clearing shall be conducted or supervised by an International Society of Arboriculture (ISA) Certified Arborist holding a current certification.
- C. Foreman, laborers, and other field staff shall be thoroughly familiar with natural areas restoration and shall have a working knowledge of the type and operation of equipment being used. All Natural Areas Contractor crewmembers shall be well versed in the identification of native and non-native woody and herbaceous species during both the dormant and growing seasons.
- D. If conducting prescribed fire, the Burn Boss shall have met the requirements



Figure 2-7: 2" Native Potted Plug with Label



Figure 2-8: Native Planting Contractor



of Illinois Law and Regulations (17 Illinois Admin. Code 1565.70) and shall be recognized as a Certified Prescribed Burn Manager in compliance with the Illinois Prescribed Burning Act (525 ILCS 37). All prescribed fire crewmembers shall have a minimum of one year documented experience conducting prescribed fire and successful completion of NWCG S130/S190 or equivalent.

- E. Refer to Appendix B for a list of local professional Natural Area Contractors in the area.

#### 2.01.06 Permits and Fees

- A. Natural Areas Contractor shall obtain any necessary permits for the required work and pay any fees required for permits.

## 2.02 Stormwater Management Design

In order to establish native species, stormwater management facilities and streambanks must be designed using specific techniques. If designed inappropriately it will be a challenge to establish native plants successfully and costs will increase. The VILLAGE requires hydrograph information be calculated by engineers and provided to landscape architects and native planting designers for each detention facility. Hydrographs shall be used to understand water volume and peak flows that are essential in developing species lists. See Appendix G for more information on hydrographs.

#### 2.02.01 Stormwater Detention Basins

Understanding the type of stormwater detention basin(s) that is in your development is critical to successful establishment of native plantings. There are two types of stormwater detention basins (See Section 1, Figures 1-3 and 1-4 for Cross Sections):

- A. Dry-Bottom Detention Basin (Figure 2-9) – Just as the name implies, these basins have a bottom that is dry except during rain events. They are designed to detain stormwater temporarily after a rain event, releasing it slowly downstream over an extended period, sometimes referred to as “draw down time.” Implementing native plantings within these basins decreases soil erosion, promotes water infiltration, and helps to filter pollutants out of the smaller, more frequent rain events.
  - 1. Basin Design Criteria –
    - a. Dry-bottom basins should be designed to have positive drainage to ensure that all the water drains from them following a rain event. Grading contractors cannot perfectly grade a completely flat bottom basin and it will always end up with un-planned low spots that stay wet and cannot support the plants specified for a dry-bottom condition. If a flat bottom is desired, plunge pools must be incorporated throughout the basin in order to ensure a designed low area for water to settle. These areas can then be planted with a different set of species suited for wetter environments.
    - b. Decompact the subbase soils and spread 12” of quality topsoil throughout the bottom of the basin to increase seed germination, increase water holding capacity and help promote infiltration.
- B. Wet-Bottom Detention Basin (Figure 2-10) – Wet-bottom basins are designed similarly to dry-bottom basins but retain small amounts of water after a rain event and incorporate wetland plantings within the bottom of the basin.
  - 1. Basin Design Criteria –
    - a. Design water depths of less than 24”, concentrate on water depths between 6-12”. Vegetation will be sparse in 18-24” water depths. Water depths of 24-48” will typically not support quality vegetation and will be subject to algae blooms.
    - b. Vary the water depths throughout the basin bottom, creating some areas that become exposed during drier time of the year. This creates better habitat and encourages populations of insects and other animals that feed on mosquitos.
    - c. When designing water depths greater than 18”, consider installing a water control structure so that the contractor has the ability to lower water levels for planting and maintenance purposes (Figure 2-11).
    - d. Over-compact the sub-base soils so that they will hold water, then spread 12” of quality topsoil throughout the bottom of the basin to increase plant establishment and water holding capacity.
- C. Retention (Pond) Basin – As the name implies, retention basins are designed to retain water permanently and are often referred to as a “pond” (Figure 2-12). These basins still provide a detention function, capturing and detaining stormwater during rainfall events above the normal water level. Because these basins hold water all year and are subject to ice sheer during the winter, shoreline erosion is a major concern with this type of basin. Implementing native plantings along the





Figure 2-9: Successful Naturalized Dry Bottom Detention Basin



Figure 2-10: Successful Naturalized Wet Bottom Detention Basin

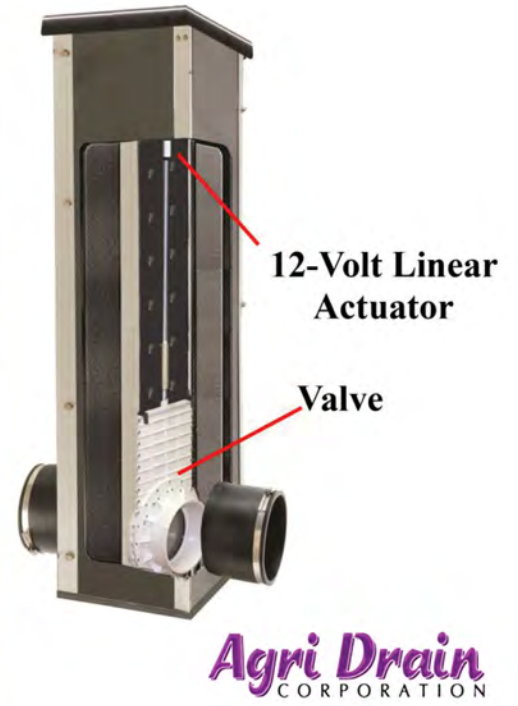


Figure 2-11: Water Control Structure



Figure 2-12: Successful Naturalized Pond Retention Basin

shoreline and up the slope decreases soil erosion, deters geese, filters pollutants and helps reduce algae blooms.

1. Basin Design Criteria –

- a. A standard design element of retention basins is a “safety shelf.” This is typically a three to ten foot wide shallow area directly adjacent to shore that protects people from drowning if they accidentally fall into the water. The bulk of these areas should be designed to have a water depth below 12” in order to support the maximum amount of plant material.
- b. Decompact the subbase soils along the safety shelf and spread 12” of quality topsoil throughout the shelf areas to increase wetland plant establishment rates.
- c. Beyond the safety shelf, basin grades should drop rather sharply to a final minimum depth of eight feet, which is the depth required for overwintering of fish. Plant material will struggle to establish in water levels deeper than 18”.. As the water level deepens, the water temperatures cool making it more difficult for algae to grow.
- d. Understand that your basin will likely receive some eroded soil that will settle in the bottom (referred to as “sediment”) during construction as well as long term organic material (leaves, dead algae, etc.). Sediment and muck development will reduce the overall depth of a pond over time, therefore the VILLAGE advises that the deepest basin bottom depths be designed a minimum of two feet below the desired final basin depth.
- e. When designing water depths greater than 18” consider installing a water control structure so that the contractor has the ability to lower water levels for planting and maintenance purposes (Figure 2-11).

D. Stormwater Basin Plant Selection Criteria –

1. On the bottom of a dry-bottom basin, specify plants that can withstand long periods of drought and shorter periods of inundation. Redundancy is important in these mixes: incorporate a combination of dry, mesic, and wet adapted native species.
2. On the bottom of a wet-bottom basin and within the safety shelf of retention basins, specify plants that can withstand continually wet soils and/or standing water conditions. In basins that produce hydrographs showing frequent, long periods of high inundations (one foot or more over a 72 hour period) it may be necessary to specify a portion of the plantings as floodplain species.
3. The area of slope between Normal Water Level (NWL) and High Water Level (HWL) is referred to as the “bounce zone.” During rain events water level fluctuates in this area, specify plants that can withstand long periods of drought and shorter periods of inundation. It is advisable to design species lists for between NWL and the 2-year storm, between the 2-year storm and the 10 or 25-year storm, and between the 10 or 25-year storm and the 100-year storm.
4. See Figure 2-13 for planting zone cross sections and Appendix A for the VILLAGE approved native seed and plant mixes.

### 3.02.02 Sedimentation Basin

There are numerous common elements that can be added to detention basins to provide improved results. The first is to add a sedimentation basin or forebay. Most of the sediments and pollutants entering a stormwater basin occur during construction and long term during the more frequent storm events. Using sedimentation basins to capture sediment before it gets to the main body of the basin will extend basin life, reduce algae, and divert expensive dredging activities from the larger basin and contain it within a designated portion of the basin. Sedimentation basins should capture and detain the volume of water associated with frequent storm events for a period of 18 to 24 hours. Using pre-treatment measures like this can delay the need for basin dredging by up to 40 years.

### 3.02.03 Water Quality BMPs

As summarized in Section 2, water quality Best Management Practices (BMPs) are alternative drainage techniques used in a stormwater management program that reduce runoff and improve water quality. The main goal of their implementation is to use landscaped areas to move (if necessary), store, and filter stormwater within the project site. The VILLAGE encourages residents and developers to incorporate the BMPs on their properties, minimum design criteria for the most common water quality BMPs are provided below.

- A. Bioswales – It is important to realize that there is no single, perfect design for bioswales. They can take many shapes and forms depending upon your site and the stormwater goals (See Figure 2-14). Bioswales can be designed to percolate and filter water through an engineered soil matrix or can be designed simply as water conveyance systems that rely on native plantings to filter the water as it passes through the system. They can be designed to remain wet or to dry out after each

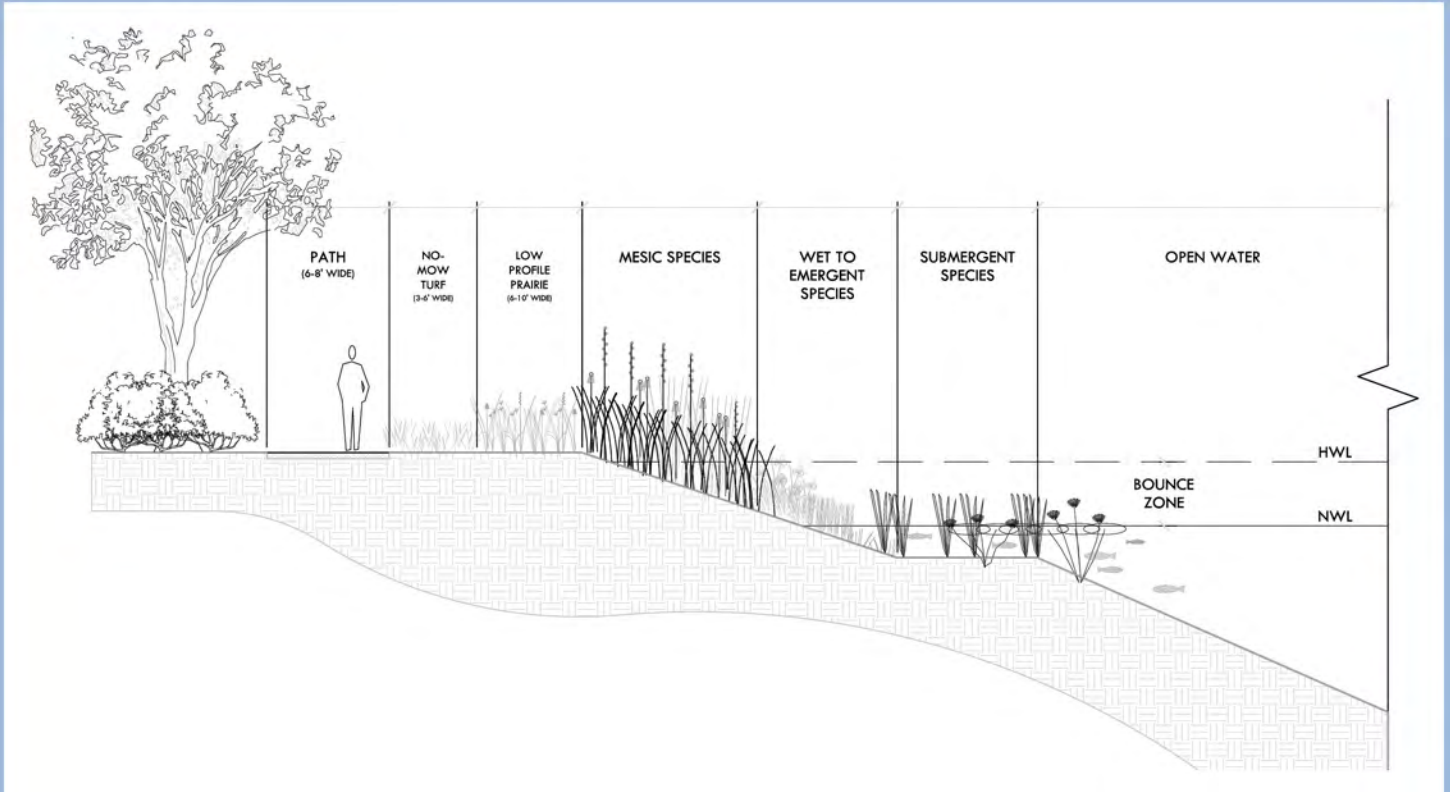


Figure 2-13: Example Planting Zone Cross Section



Figure 2-14: Bioswale in a Parking Lot using Native Plants



rain event.

1. General Design Criteria –

- a. Bioswales should be designed to hold a minimum of a 10-year storm, have minimum 3:1 side slopes, must have positive drainage of no less than 0.5%, and must have a designated emergency overflow pathway. Designs outside of these parameters must be approved by the VILLAGE.
- b. If the goal of the swale is to infiltrate water, the swale should have a percolation rate into native soils of greater than one-half inch per hour. Test your native soil's ability to percolate water; if it has adequate percolation take great care not to compact the soils during construction. If the native soils do not have adequate percolation rates or become compacted, water infiltration will not be possible and the focus should be on water filtration rather than infiltration.
- c. For filtration bioswale systems, design a sand-based engineered soil in the swale bottom and install perforated drain tile pipes several feet below the surface.
- d. Install a water bypass valve so that the contractor has the ability to control water levels during plant establishment. For example, if the bioswale is designed to hold 24" of water during a rain event, significant inundation during plant establishment may kill the newly installed plants. The valve can remain open during plant establishment to ensure significant standing water does not occur. Once the plants mature, the valve can be closed and the bioswale can function as designed.
- e. Provide a water source for irrigation during plant establishment, especially when using a sand-based engineered soil matrix. Plants will need to be watered consistently for 6-8 weeks following installation and long-term may need supplemental water in times of extreme drought.

2. Bioswale Plant Selection Criteria –

- a. The key is to fully understand your bioswale's designed hydrology. Because the soils in the Village of Lemont do not typically percolate well, especially after construction, most bioswales tend to be designed with an engineered soil and underdrain system. This means that the soils will be wet during rain events, but will be dry for 85% of the year or more. Wetland plants will not survive or may perform poorly during long dry periods, though many upland species can easily withstand short periods of inundation. Ensure you select native species for the designed hydrology of your bioswale.
- b. At a minimum live native plants must be specified for the bottom of all bioswales. Native seed can be used along with the plugs and on the side slopes, but plugs are required to be planted on the bottom unless otherwise approved by the VILLAGE. Seed can be easily washed away by water flow and germination can too often be impeded by salt deposits from roads and parking lots.
- c. Plant height must be considered when designing a bioswale species list. Many bioswales are located next to parking lots and sidewalks, in which case a shorter plant palette should be chosen to ensure that plants do not inhibit pedestrian and automobile sightlines (Figures 2-15 through 2-17).
- d. See Figure 2-13 for planting zone cross sections and Appendix A for the VILLAGE approved native seed and plant mixes.

B. Rain Gardens and Bioinfiltration Basins – Similar to bioswales, rain gardens and bioinfiltration basins are intended to catch runoff and improve water quality. The difference is that rain gardens are not designed to convey water.

1. General Design Criteria –

- a. Apply the bioswale design criteria and see Figure 2-18.

2. Rain Garden and Bioinfiltration Basin Plant Selection Criteria –

- a. Apply the bioswale plant selection criteria and see Appendix A for the VILLAGE approved native seed and plant mixes.
- b. Often implemented by homeowners, rain gardens can direct stormwater to a planting bed so that the rest of the yard stays dry or water does not travel directly to the road and into the storm sewers. Rain gardens may have more of a specific aesthetic value implemented by choosing showy plants and those that specifically attract beneficial wildlife.



Figure 2-15: Clean and simple bioswale planting design using natives



Figure 2-16: Poor Bioswale Planting Design



Figure 2-17: Poor Bioswale Planting Design

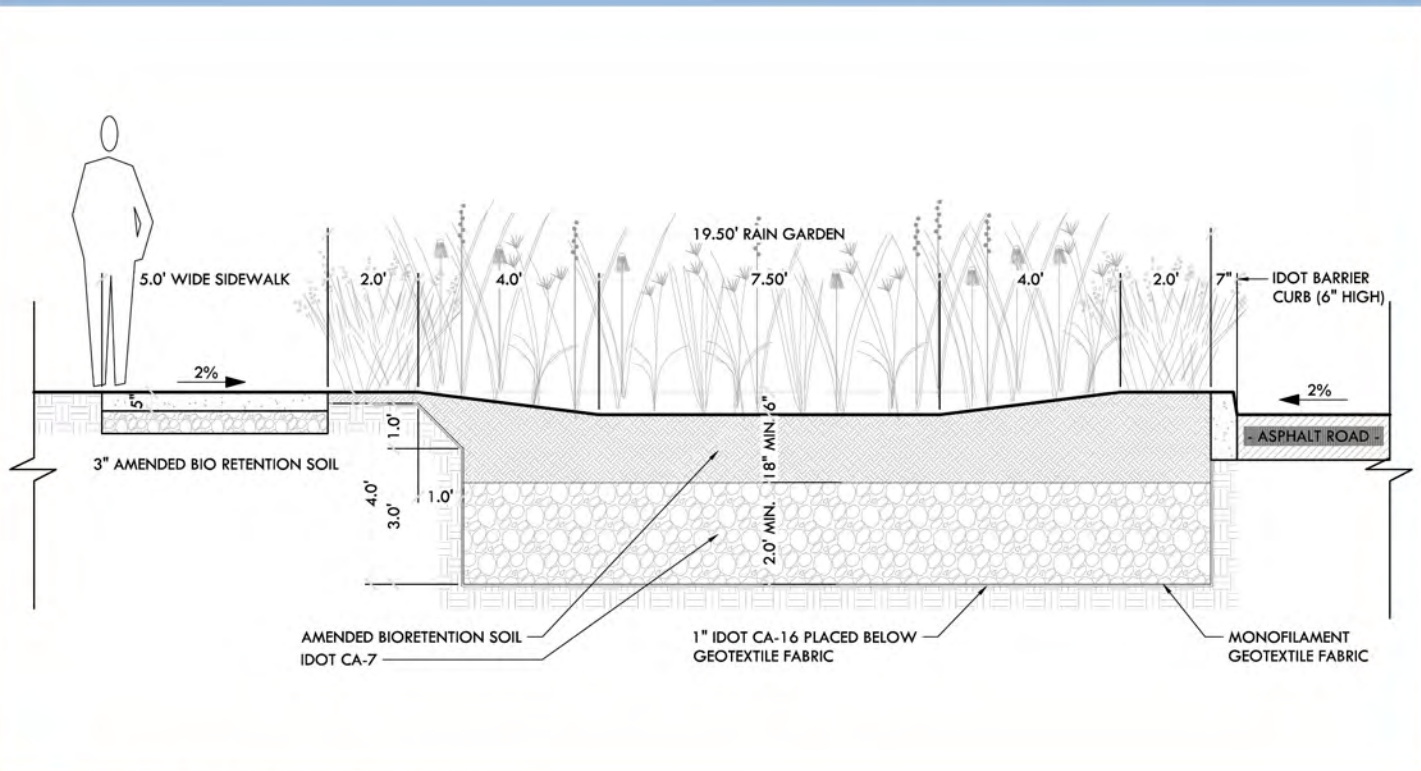


Figure 2-18: Example Rain Garden Cross Section





SECTION

# 3

## CONSTRUCTION & PLANTING GUIDELINES

Proper site preparation and installation techniques are the ultimate component to successful native planting establishment. Ensuring that your design specifications include a detailed, well thought out installation program should rule out many costly mistakes, reduce reinstallation needs, and lead to quicker plant establishment. In an effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the minimum baseline design criteria that should be followed when developing construction plans and specifications.

The Village must review and approve all proposed native planting plans for new development within the Village. For plan review purposes, a submittal checklist has been developed to summarize plan requirements for native planting plans, refer to Appendix E.

### 3.01 Site Preparation

#### 3.01.01 Existing Vegetation Protection

Prior to beginning design, survey and create a general inventory of existing vegetation throughout the project site. Village Ordinance requires that existing trees, wetland, and riparian areas be identified on any proposed development plans. The VILLAGE also encourages developers to assess the ecological quality of those areas and any other areas on the development site that might be considered high quality (e.g. a prairie remnant or shrubland). The developer should make every effort to preserve identified areas of high quality existing vegetation and protect them appropriately during construction. Protection measures are to be detailed within the construction plans and specifications, but generally include:

- A. Tree Protection – Mature trees slated to remain should be protected from direct damage to trunks and limbs, however equally important is to protect the root zone from filling and compaction. The majority of a tree's feeder roots are within the top two inches of soil. This is how a tree gets much of its water and oxygen. If the feeder roots are smothered by the placement of fill, compaction due to vehicles, tilling, or soil excavation, the tree may be severely damaged or die.
- B. Wetland Protection – Wetlands that are not being impacted by the developer should be protected by placing silt fencing around the perimeter of the required wetland buffer. The VILLAGE encourages developers to include restoration and management plans for existing wetlands as part of the land development process. Quality restored wetlands benefit the community and make the development more marketable. **Mitigation wetlands that have been approved by the appropriate regulatory agency shall be designed following these design standards.**
- C. Other Natural Areas Protection – High quality remnant natural areas or reconstructions should be protected by erecting temporary high visibility fencing to deter equipment from damage during construction.

#### 3.01.02 Brush and Tree Clearing

Site preparation begins with the removal of undesirable woody and/or herbaceous plant materials (Figures 3-1 through 3-3). Brush and trees identified for removal on approved plans may

be cut by hand or with mechanized equipment.

- A. General vehicle traffic in natural areas should be restricted as much as possible. To minimize impact on soil structure, remnant integrity, and restoration potential, clearing and brush cutting should be performed when soils are dry and/or froze. When possible, low ground pressure equipment should be used.
- B. Hand removal is the VILLAGE's preferred method of brush or tree removal and typically involves the use of chainsaws, hand saws, and loppers.
- C. Mechanized removal typically involves the use of large wheeled or tracked vehicles equipped with large mowing or grinding implements.
- D. All cut stumps should be treated with an appropriate herbicide by a licensed professional immediately following cutting, ensuring that the herbicide is applied to the cambium layer of the woody plant.

#### 3.01.03 Graded Site Preparation

The following design criteria pertain to agricultural row-crop fields and sites that have undergone grading (earth moving) and will be restored using native plantings.

- A. The Natural Areas Contractor shall coordinate with the Grading Contractor to ensure proper handling within planting areas. A preconstruction meeting and at least one (1) meeting during construction shall be held in order to coordinate equipment movement within planting areas to avoid/reduce soil compaction and to review underground utility location maps and plans. This meeting shall be coordinated by the Construction Project Manager. The following tasks may be performed by the Grading Contractor with proper coordination, though it is the responsibility of the Natural Areas Contractor to ensure that the native planting areas are prepared according to this document.
- B. After the completion of subgrade preparation the Natural Areas Contractor shall till soil to a depth of four (4) inches within areas designated for native seed mixes (Figure 3-4). When conditions are such that, by reason of drought, frost, excessive moisture, or other factors satisfactory results are not likely to be obtained, the work will be suspended and shall resume only when conditions are appropriate. Undulation or irregularities in the surface that would interfere with the Natural Areas Contractor's operations or maintenance shall be leveled before the next operation (Figure 3-5).
- C. In newly graded areas, spread topsoil to a minimum depth of 6" meeting the thickness, grades, and elevations shown on engineering plans after light rolling and natural settlement (Figure 3-6). When conditions are such that, by reason of drought, frost, excessive moisture, or other factors satisfactory results are not likely to be obtained, the work will be suspended and





Figure 3-1: Clearing of a project site infested with buckthorn and invasive species



Figure 3-2: Post clearing photo illustrating an open ground plane



Figure 3-3: The same site the summer after brush clearing and seeding

Clearing the invasive brush within wooded sites allows light to reach native plants that were stifled by their presence. Once the brush is removed suddenly these plants have the resources and space to grow. Unfortunately, so do weeds. If a rigorous maintenance routine and planting strategy isn't immediately implemented the site will revert back to the unsightly and impenetrable brush.



shall resume only when conditions are appropriate. Add specified soil amendments and mix thoroughly into the upper four (4) inches of topsoil. Delay mixing fertilizer with topsoil if planting will not proceed within 72 hours of spreading. If required, mix lime with dry soil before mixing fertilizer.

1. Spread approximately  $\frac{1}{2}$  the thickness of topsoil over loosened subgrade. Work into top of loosened subgrade to create a transition layer. Spread remainder of planting soil.
- D. Prior to beginning seeding/planting operations the Natural Areas Contractor shall:
1. Confirm topsoil placement by the Grading Contractor within all planting zones.
  2. Request copies of soil test results for review. If soil test results are not available, Natural Areas Contractor shall conduct soil testing as per the products section of this document. If soils do not meet specification it shall be amended or replaced by the Natural Areas Contractor prior to beginning seeding/planting operations.
  3. Confirm that the Grading Contractor has removed all foreign matter and/or soil clods larger than two (2) inches in any dimension within the areas to be seeded. Natural Areas Contractor shall be responsible for removing all foreign matter prior to beginning seeding/planting operations.
  4. Check compaction of topsoil (0-6" depth) and normal subsoil depth (6-12" depth). Soil should be loose and friable. A 200 pound person should leave a  $\frac{1}{4}$ " –  $\frac{1}{2}$ " deep footprint.
- E. Natural Areas Contractor shall utilize equipment having low unit pressure ground contact within planting areas. They shall take precautions to ensure that equipment and vehicles do not damage the grading, utilities, structures, or existing trees and shrubs during planting operations. Any damage shall be repaired by the Natural Areas Contractor.
- F. Non-native perennial species may require control with a low toxicity (2% mixture), non-persistent glyphosate based herbicide. Under no circumstances are persistent herbicides to be used. Apply herbicides as needed after grading operations.
- G. Allow 10-14 days after spraying herbicides prior to cultivating for seed bed preparation. Check for weed growth. Reapply herbicide when the weeds are 2-3 inches tall. Wait 10 days and rake smooth. Do not compact.

#### 3.01.04 Vegetated Site Preparation

The following design criteria pertain to remnant sites undergoing restoration and areas with degraded existing vegetation that will be restored using native plantings.

- A. Planting areas that contain solid stands of existing

non-native/weedy herbaceous vegetation and are not to be disturbed by grading operations, or have been graded and now have established non-native/weedy herbaceous vegetation, shall be treated with applications of a glyphosate herbicide resulting in a complete kill of all existing vegetation. Broadcast or "boom" spraying of herbicide is acceptable under these conditions; precautions shall be taken to eliminate damage from overspray.

- B. Planting areas that contain existing desirable native herbaceous vegetation and are not to be disturbed by grading operations shall be treated with applications of an appropriate selective herbicide, resulting in a 99% kill (brown-out) of non-native/weedy herbaceous vegetation and the survival of existing desirable native herbaceous vegetation. Limited spot applications of herbicide shall be utilized if conservative native plant species within the planting area to be preserved.
- C. Planting areas that are heavily vegetated with persistent species such as fescues (*Festuca spp.*), reed canary grass (*Phalaris arundinacea*), or Canada thistle (*Cirsium arvense*) often require two or more herbicide applications at 2-3 week intervals to kill resprouts and seedlings from the existing seed bank.
- D. Herbicide applications in or adjacent to shorelines or open water shall utilize an herbicide approved for aquatic use.
- E. Mowing and/or prescribed fire may be required to eliminate standing biomass prior to seeding. Conduct mowing and/or prescribed fire as shown on the plan(s).
- F. Seed-to-soil contact is critical for native seed germination and plant development. Wherever biomass, thatch, or any other debris remains on the soil surface that will inhibit good seed-to-soil contact, the Native Areas Contractor shall "hard rake" the soils within vegetated planting areas prior to seed installation utilizing a gill rake, forestry mower, power dethatcher, or other method intended to expose the existing site soils for proper seeding (Figure 3-7). In areas with obstructions preventing the use of mechanized equipment, the Natural Areas Contractor shall scarify the existing soil with hand tools (Figure 3-8). Care shall be taken within the drip line of existing trees to ensure that no more than two inches (2") depth of soil is disturbed. Prior to conducting soil scarification operations, the Native Areas Contractor shall submit their proposed plan to the VILLAGE for approval.
- G. Native Areas Contractor **shall not** disc or roto-till the soils within vegetated planting areas prior to planting, unless the area(s) have been heavily trafficked/compacted or as otherwise directed by the VILLAGE. Whenever vegetated planting areas are disturbed, they shall be prepared for planting as per the "GRADED SITE PREPARATION" section of this guideline.
- H. Natural Areas Contractor shall utilize equipment having



Figure 3-4: Tilling the soil



Figure 3-5: Ruts in the soil to be smoothed



Figure 3-7: Removing debris & prepping site



Figure 3-6: Acceptable prepared site



Figure 3-8: Hand racking in seed

low unit pressure ground contact within planting areas. They shall take precautions to ensure that equipment and vehicles do not damage the grading, utilities, structures, or existing trees and shrubs during planting operations. Any damage shall be repaired by the Natural Areas Contractor.

#### 3.01.05 Soil Testing & Amendments

Soil analysis and testing can determine the ability of a site to support vegetation. If the history of the site or the soil brought to the site is unknown, this simple and inexpensive preventative step can save residents and developers money by reducing the likelihood of an unsuccessful installation. The VILLAGE have established the following minimum criteria to be applied within native planting areas:

- A. Soils within the bottom of stormwater facilities (detention basin bottoms, naturalized swales, etc.) that have had the potential to be exposed to over-winter road salt drainage prior to native seed installation shall be tested by an independent laboratory regarding its suitability for native seed germination.
- B. If it is discovered that a soil's condition will inhibit native seed germination, the Native Landscape Contractor shall submit a soils mitigation plan to the VILLAGE for approval prior to installation of native seed. The soil mitigation plan may include soil amendments to

correct soil structure, nitrification and/or chemistry, or it may include the importation of suitable topsoil approved by the VILLAGE.

1. The testing laboratory and/or an Agronomist should determine whether a soil's condition will inhibit native seed germination based upon the full results of the soil test. However, in general a soil condition that inhibits native seed germination is one that *typically*\* exhibits one of the following characteristics:
  - a. pH outside of the range of 6.5 – 7.5
  - b. Exchangeable Cations of Sodium (NaCl) above 100 lbs/acre
  - c. Base Saturation (Percent) of Sodium (NaCl) above 1%
  - d. Base Saturation (Percent) of Magnesium (Mg) above 12%
  - e. Soluble Salts measuring above 2 mmhos/cm

\*the above characteristics/limitations are generalities, the soil test needs to be evaluated in its entirety by qualified personnel in order to determine its suitability for native seed germination.

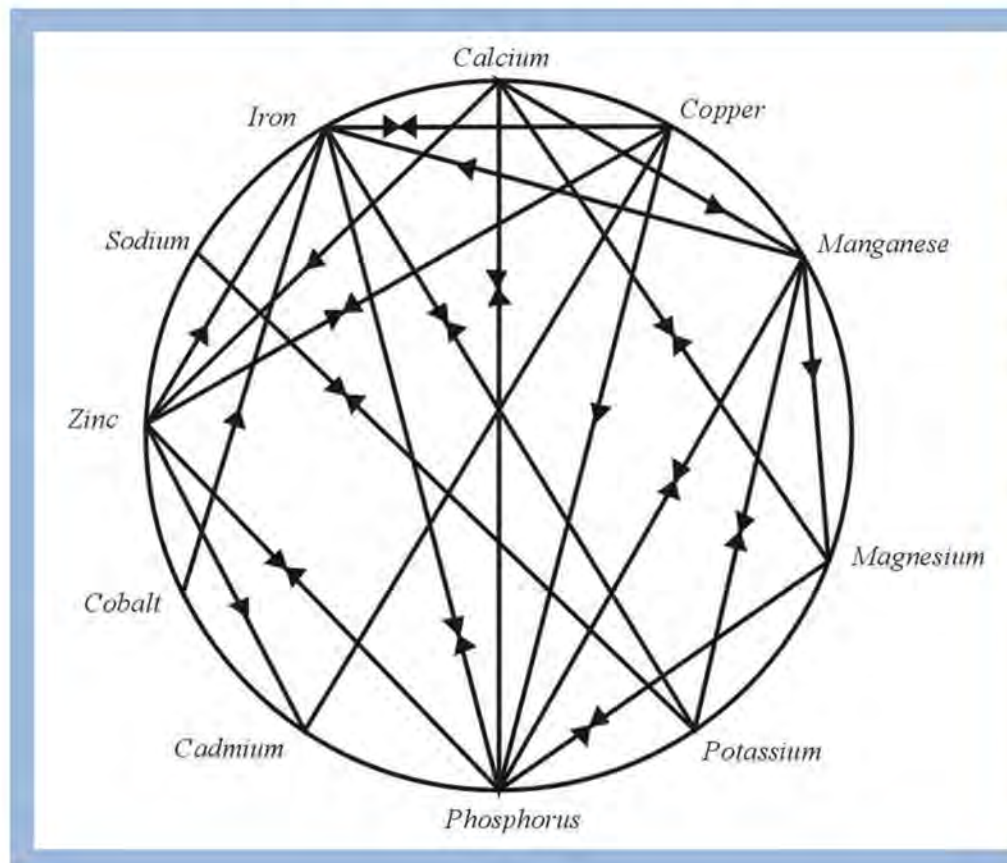


Figure 3-9: A mineral wheel illustrating the relationships between minerals within the soil is shown on the left. The location of the arrows represent the effect one mineral has on the availability to a plant of another mineral. For example, the absorption of zinc is dependent upon phosphorus, calcium, and iron. Higher levels of phosphorus inhibit the uptake of zinc but increase the availability of magnesium and so on. Many minerals rely on others to be present which is why it is important to test soils before investing the money to implement a natural area. It may be difficult to add the necessary soil amendments after a planting has been installed without damaging the existing vegetation.

### 3.01.06 Miscellaneous Considerations

During construction of a development, there are many activities going on at the same time involving several different contractors, designers, regulators, etc. Prior to installing native seed or plants, it is advisable that the Natural Areas Contractor effectively communicate with the rest of the development team that they are going to begin installation so that some

**Natural areas take 3-5 years to develop, so they can appear weedy or unplanted to the untrained eye. An individual may think they are not hurting anything if they drive through the area or store their building scraps in your prairie.**

of the common missteps can be identified and resolved prior to installation. If these issues arise, they typically result in the contractor having to re-seed and/or re-plant adding significant cost and time to the project. The VILLAGE has identified some of the common pitfalls below, but there may be others specific to your project.

- A. Stormwater Risers or Outfall Restrictors – Often during construction, the developer is required to install a temporary riser or restrictor in the outflow pipe of stormwater basins for sediment control during construction. Risers and restrictors will artificially raise the normal water level of a basin to allow soil in the stormwater to settle out prior to leaving the basin. This means that if the basin is designed to be dry-bottom it is common for it to consistently hold one or two feet of water while the riser/restrictor is in place. As you can imagine, if the bottom of a basin is seeded or planted prior to the restrictor or riser being installed, the entire planting will be flooded and seed will wash away or live plugs killed. Talk with the General Contractor or Grading Contractor and be certain that all risers or restrictors are removed prior to seeding/planting and will not be replaced once the seeding/planting is complete.
- B. Water Control Structures – The VILLAGE recommends that a water control structure be considered in wet-bottom and retention basins. Typically these structures have a locking mechanism that prevents tampering with the water levels. The Natural Areas Contractor should ensure that they have access to manipulate the structure and final control over the water levels in the basin.
- C. Filter Fabric – It is common for filter fabric to be installed inside of catch basin grates to filter sediment from soil-laden stormwater entering the grate during construction. These drainage structures then tend to drain much more slowly than originally designed and may impact the hydrology of your site. This is most commonly an issue when these

structures are the main drainage outlet for a bioswale or rain garden feature, keeping them temporarily wet while the fabric is in place.

- D. Equipment or Vehicle Encroachment – Once an area has been seeded or planted, it is advisable for the Natural Areas Contractor to erect temporary fencing, barricades, signage, or some other structure to prevent other contractors working on the site from storing or driving equipment and vehicles into the native planting area. Unfortunately this is a common occurrence, particularly at the top of basin slopes where they abut lots, roads, or right of way areas.
- E. Landscaping – Landscape Contractors often do not realize how some of their standard practices can negatively impact the development of the native planting areas. For example, a Landscape Contractor may lay turf grass sod on a lot adjacent to a detention basin, apply an herbicide that prevents weed seeds from germinating, and then begin running an irrigation system. The water running off of the sod, carrying the pre-emergent herbicide, will wash down the side slopes of the adjacent basin preventing germination of the native seed that was recently installed. More commonly, Landscape Contractors or homeowners apply a “weed-n-feed” fertilizer to their lawn and overspray into an established native planting. The herbicide in that application is a broadleaf herbicide and will kill all of the wildflowers that it contacts. It is in the best interest of the developer to ensure that the Natural Areas Contractor is in close coordination with the Landscape Contractor during construction and during ongoing maintenance.
- F. Dumping – Throughout the construction process and once homes are occupied by residents, dumping of waste materials in the native planting areas may be an ongoing problem. Building Contractors may clean out their concrete trucks or dump excess gravel in your planting area. Homeowners may dump grass clippings and yard waste in your planting area. Fencing, barricades, or signage may help prevent some dumping, but the Natural Areas Contractor should plan on regular site inspections so they can identify and remove any dumped materials before they can permanently damage the planting.

## 3.02 Seed Installation

Seeding is the main approach to large-scale native planting implementation because it is economical, though it does take three to five years before good establishment is achieved and requires the contractor to be experienced and knowledgeable in native plant development.

### 3.02.01 Timeframe

The time of year that native seed is installed for a native planting project is very important in determining a successful outcome.



In comparison to traditional turf grasses that are cool season (seeds germinate and the greatest vegetative growth is in cool soil conditions), most native seed mixes contain both cool season and warm season (seeds germinate and the greatest vegetative growth is in warm soil conditions) species. In addition, many native plants produce seed that is initially dormant. Native seed dormancy is an adaptive trait, allowing germination to occur over time and during the proper season. This vital trait prevents the germination of all seeds at a time that might be suboptimal, or even lethal, for seedling establishment. Seed dormancy is broken through a process called "stratification" and usually consists of scarification (scratching of the seed coat to allow moisture penetration) or extended exposure to cold, moist conditions (over wintering). To help ensure optimal conditions for seed germination, the VILLAGE has provided the following minimum criteria for the timing of native seed installation. Alternative seeding timeframes must be approved by the VILLAGE and may trigger additional requirements, such as irrigation or artificial stratification.

A. NON-STRATIFICATION SEED MIXES:

1. Non-Stratification seed mixes are those consisting of 60% or more species by seed count that do not require cold moist stratification periods of 30 days or more.
2. Optimal Installation Timeframe
  - a. Spring: March 1<sup>st</sup> – June 30<sup>th</sup>
  - b. Dormant: September 15<sup>th</sup> – October 31<sup>st</sup>

B. STRATIFICATION SEED MIXES:

1. Stratification seed mixes are those consisting of 60% or more species by seed count that require cold moist stratification periods of 30 days or more.
2. Optimal Installation Timeframe
  - a. Dormant: November 1<sup>st</sup> – December 31<sup>st</sup>

C. GRASS MONOCULTURE SEED MIXES:

1. Grass monoculture seed mixes are typically comprised of warm season grass species requiring 60-70° soil temperatures to germinate.
2. Optimal Installation Timeframe
  - a. June 1<sup>st</sup> – July 15<sup>th</sup>: Seeding during this period is required for germination and appropriate establishment. Consistent irrigation shall be provided.

### 3.02.02 Seeding Methods

- A. All seeding and planting zones/locations shall be laid out and marked on the project site by the Natural Areas Contractor according to the plan. No seeds or plants shall be installed until the seeding and planting zones/locations have been approved in writing by the VILLAGE.
- B. Seed shall be mixed with a cover crop consisting of *Avena sativa* (seed oats) at a rate of sixty (60) pounds per acre for spring plantings or ReGreen™ (wheat x wheatgrass hybrid) cover crop at a rate of fifty (50) pounds per acre for fall plantings and with a granular form of endomycorrhizal

inoculant at a rate of forty (40) pounds per acre.

- C. For Inter-Seeding into Existing Vegetation: Seed shall be drilled by a modified\* rangeland type no-till drill **designed to plant native grass and forb seed** (such as the Truax No-Till Drill, see Figure 3-10) if the soil is firm enough. Seed shall be drilled in at least two (2) separate runs where each application of seed shall overlap the previous application by one half (1/2) the weight to insure double coverage of seeded areas (example: seed in a north to south direction at ten pounds per acre, then overlap by seeding in an east to west direction at ten pounds per acre, resulting in a total coverage of twenty pounds per acre [twenty pounds per acre is an example only, see Appendix A for actual project seeding rates].) Each planting run shall overlap by a minimum of one (1) planting row. Some seed species require exposure to sunlight for germination, these species shall be planted separately, after drilling, utilizing the broadcasting method. [\*Prior to seeding, detach the bottom portion of half (1/2) of the small box seeding tubes so that the seed is surface sown instead of drilled into the soil]
- D. For Newly-Graded Sites or Other Loose Soil Conditions: Seed shall be drop-seeded by a rangeland type dropseeder **designed to plant native grass and forb seed** (such as the Trillion or Belco seeder, see Figure 3-10). Seed shall be installed in at least two (2) separate runs where each application of seed shall overlap the previous application by one half (1/2) the weight to insure double coverage of seeded areas (example: seed in a north to south direction at ten pounds per acre, then overlap by seeding in an east to west direction at ten pounds per acre, resulting in a total coverage of twenty pounds per acre [twenty pounds per acre is an example only, see Appendix A for actual project seeding rates].) Each planting run shall overlap by a minimum of six (6) inches. Some seed species require exposure to sunlight for germination, these species shall be planted separately, after dropseeding, utilizing the broadcasting method.
- E. If site conditions prohibit the use of mechanized seeding equipment, broadcasting of seed is acceptable on **exposed soil only**. If seed is broadcast, it shall be mixed with an equal amount of inert filter (such as sand, vermiculite, rice hulls, etc.) to enable an even distribution of seed. A mechanical broadcast seeder may also be utilized, such as the Truax Seed Slinger (Figures 3-13 and 3-14). Seed shall be broadcast in at least three (3) separate applications unless otherwise approved by the VILLAGE:
  1. Broadcast half (1/2) of the specified native grass seed first. Drag the seeding area utilizing a rake or similar equipment, work native grass seed into the soil achieving a final planting depth between 0.25" (1/4") – 0.5" (1/2").
  2. Broadcast remaining native grass seed, cover crop and one-third (1/3) of the remaining seed mixture (sedges/rushes/forbs), reserving 100% of any



Figure 3-10: Belco Greenscape Conservation Seeder



Figure 3-11: Seed Boxes

Rangeland dropseeders are the most effective method of seeding natural areas. They are equipped with seed boxes designed to hold different seed types and spread seed evenly in uniform rows over both newly graded sites or areas with existing vegetation. The seed planting rate can also be controlled to ensure excess seed is not wasted.



Figure 3-12: Uniform rows created by a Belco Greenscape Conservation Seeder



Figure 3-13: Hand Seeder



Figure 3-14: Hand Seeder

species indicated as “surface sown” in Appendix A. Lightly drag the seeding area utilizing a rake or similar equipment, working the native seed into the soil achieving a final planting depth between 0.0625” (1/16”) – 0.25” (1/4”).

3. Broadcast remaining seed directly atop prepared seedbed. Do not drag or rake.
  4. Where site conditions allow it, roll broadcast seeded areas immediately after installation to ensure good seed-to-soil contact.
  5. Depending upon the soil structure after preparation, this approach may require modification. On-site consultation with the VILLAGE is highly recommended.
- F. Do not sow seed in areas where standing water is present, during adverse weather, or when wind speeds exceed ten (10) miles per hour unless approved in writing by the VILLAGE.
- G. Seed shall be installed at a depth no greater than 0.25” (Figure 3-15).
- H. Hydroseeding of native seed is not acceptable. Hydromulch may be utilized as an erosion control method upon written approval by the VILLAGE.
- I. The Natural Areas Contractor shall rake, roll or drag broadcast seeded areas perpendicular to the slope within 24 hours after seeding, or as soon as site conditions permit. The use of compaction wheels on the seed drill or cultipacker on the dropseeder is acceptable.

#### 3.02.03 Erosion Control

Erosion control blankets are needed anytime planting is conducted on bare soil, especially slopes, and any planting conducted in the fall. Blankets used in restoration should be temporary biodegradable products and are typically made of straw, coconut fiber, or a combination thereof (Figure 3-16). Products using biodegradable netting, such as North American Green S-75BN, are preferred as snakes, birds, and other wildlife as they do not become entrapped in the netting as easily as the synthetic products. Excelsior wood fiber mats or permanent “Turf Reinforcement Mats” (TRM) should not be used; excelsior mat products are not very compatible with broad leaved vegetation (wildflowers) and TRMs leave permanent thick plastic netting on the soil that will make supplemental seeding/ planting efforts difficult if needed at a future date. After soil preparation install the native seed, install an appropriate erosion control blanket according to the manufacturer, and finally install plugs through the blanket, if necessary, ensuring not to damage the blanket (Figure 3-17). The VILLAGE has provided the minimum criteria below for erosion control blankets used within native planting areas.

- A. Erosion control measures shall be implemented immediately upon seeding completion. The VILLAGE

may reduce erosion control requirements based on site conditions and/or planting.

1. All seeded areas on newly graded sites shall include the installation of a temporary erosion control blanket.
2. All planting areas in direct contact with water (Normal Water Level of shorelines, swale bottoms, etc.) shall include the installation of temporary erosion control blanket (Figure 3-18).
3. All shorelines from a minimum of three (3) feet above normal water level (NWL) to a minimum of one (1) foot below NWL shall include the installation of erosion control matting.
4. Shorelines adjacent to consistently flowing water (streams, creeks, etc.) shall be protected with coconut fiber erosion control logs (Figure 3-19).
5. Alternate blanket types, applications or locations may be required as part of the SWPPP. See SWPPP and engineering plans for additional blanket requirements.

### **3.03 Plant Installation**

Live plants establish more quickly than seed, but are more expensive and should be reserved to address specific situations where seed may not work or is not preferred. Situations best suited for plants include, but are not limited to: saturated soil or submerged soil situations where seeding is difficult or impossible, to establish species that have difficulty germinating from seed (such as shooting star or prairie dropseed), or in a landscape situation where control over plant location is desired. Live plants can also be useful in diversifying established natural areas.

#### 3.03.01 Timeframe

If possible, live native plants should be planted in the spring when temperatures are moderate and rainfall is more frequent. However, project schedules often change and installations occur and varying times throughout the growing season. Summer planting in June, July, or August is possible but will require supplemental watering until the plants become established. Fall planting is feasible as well as long as the installation occurs early enough to allow time for the roots to grow before the threat of frost.

- A. Optimal Installation Timeframe
  1. April 1<sup>st</sup> – May 31<sup>st</sup>
- B. Alternative Installation Timeframe
  1. June 1<sup>st</sup> – September 30<sup>th</sup>: Planting of live plugs during this period can only be conducted if consistent irrigation is provided.
  2. October 1<sup>st</sup> – March 31<sup>st</sup>: Planting of live plugs during this period can only be conducted if the shrink-swell potential of the soil is low.





Figure 3-15: Seed installation depth can not exceed 0.25" for successful germination



Figure 3-17: Plugs planted in erosion blanket



Figure 3-16: Hand seeding over a straw erosion control blanket



Figure 3-18: Erosion control blanket on a slope



Figure 3-19: Coir log being installed along a stream bank to hold grade

### 3.03.02 Planting Methods

The most efficient way to install live native plants is to utilize a power auger, such as the one manufactured by Stihl (Figures 3-20 and 3-21). The auger can be used to install plants through erosion blanket if done with care, however utilizing the sharp end of a pick axe to puncture the blanket and create a planting cavity is typically more effective. The most inefficient method of plant installation is by using hand tools, such as planting trowels or shovels. The VILLAGE has established the minimum criteria for native plant installation below.

- A. Live plug planting densities will vary according to project budget and project goals.
  1. Shorelines shall include planting within the "safety shelf" a minimum of five (5) live native plugs per linear foot of shoreline and shall be distributed from 6" above Normal Water Level (NWL) to 4-5' out from NWL.
  2. Live plugs shall be installed in full or half flats, creating drifts or groupings of 16, 19, 32, or 38 of the same species rather than planting all species intermixed randomly across the site. Plant spacing within each grouping will depend upon the species being planted, but shall be restricted to a minimum of 18" on center (OC) Alternate flat sizes may be used upon written approval by the VILLAGE.
  3. Live plugs shall be installed in holes drilled with an auger with the same diameter and depth as the live plug's root massing (within  $\pm .75"/-.25"$ ). In wetland and shoreline plantings where soil is soft and moist enough, a dibble bar or trowel may be used to create planting holes. Avoid severely damaging erosion control mat during plug planting operations.
  4. Insert live plugs into hole so that the final position of the root crown following planting, soil settlement, and initial watering is slightly below the soil surface (1/8 – 1/4 inch). All crowns shall be covered with soil.
  5. Ensure that live plugs are not loose after planting. In wetland or shoreline areas with the potential for high wave action, or highly fluctuating water levels that may dislodge newly planted live plugs, plugs shall be secured with 6-8 inch "U"-shaped wire erosion control blanket staples. Staple length shall be determined by the density of the planting substrate; softer substrates require longer length to hold plugs adequately.
  6. Each live plug shall be flooded with approximately 50 ml of water after insertion into the ground.

### 3.03.03 Herbivory Protection

Herbivory must be kept in mind when planting native plants, particularly when planting them in close proximity to water. Native plantings are often damaged by waterfowl, muskrats, or by rough species of fish like carp. Exclosure netting can be erected to effectively keep waterfowl away from newly planted areas (Figure 3-22). The VILLAGE has established minimum criteria for waterfowl exclosures below.

- A. Waterfowl exclosures shall be erected around all live native plants that have been planted in areas where there is a potential for herbivory by waterfowl (especially geese), such as retention basins or other planting areas adjacent to open water. Install live plugs and goose exclosure fencing in 100' – 200' lengths, leaving 4-6' wide openings between exclosure ends to allow access to the water for people and other wildlife during the establishment period.
  1. Install steel T-posts at twelve (12) feet on-center (maximum). Drive posts into the ground so that the exclosure will extend at least two (2) feet in height above the tops of planted live plugs.
  2. Attach black UV stabilized poultry netting securely to the steel T-posts with plastic zip-ties.
  3. Attach nylon rope to the top of steel T-posts in a zigzag pattern to prevent aerial landings by waterfowl.
  4. The Natural Areas Contractor shall disassemble and remove all waterfowl exclosures from the project site after two (2) complete growing seasons. The VILLAGE may request removal of the exclosure prior to the two (2) year term ending.
  5. The Natural Areas Contractor shall maintain the exclosure in a functional and aesthetic condition. The Natural Areas Contractor shall make all required, reasonable repairs and/or replacements in a timely manner.
- B. Additional protection measures may be required to protect shoreline and wetland plantings from herbivory or damage, particularly by muskrats and carp. Waterfowl exclosures are typically not effective against other types of herbivory or damage. If muskrats present a problem they need to be trapped prior to causing severe damage (Figure 3-23). If carp present a problem a fish kill and/or benthic mesh should be considered. Herbivory or damage of plant material by wildlife shall not relieve the Developer from meeting the performance criteria, unless approved in writing by the VILLAGE.



Figure 3-20: Power auger efficiently drills holes



Figure 3-21: Carefully insert plugs into holes by hand and fill in with soil as needed



Figure 3-22: Goose Exclusion

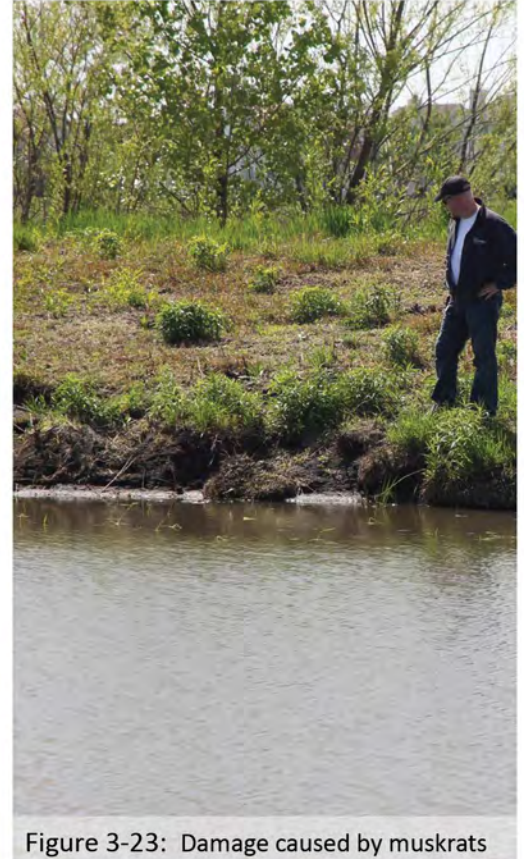


Figure 3-23: Damage caused by muskrats



SECTION

# 4

## MAINTENANCE GUIDELINE

Maintenance of native plantings during the establishment period and beyond is critical to achieving and maintaining an ecologically diverse and attractive natural area. In an effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the minimum baseline design criteria that should be followed when developing maintenance plans and specifications.

## 4.01 Maintenance Plan

Anyone wishing to use native plantings in their project must submit a short-term (Minimum 3 years after planting) and long-term maintenance and monitoring plan to the VILLAGE for review and approval. The VILLAGE has provided the following information and minimum criteria for inclusion into any native planting maintenance plan.

### 4.01.01 Establishment Maintenance Plan

The first three to five years of native planting maintenance is the most critical. It is during this time that a native planting will require the most intense and rigorous maintenance schedule. Figure 4-2 represents an example of a typical establishment maintenance activity schedule. During establishment, your native planting will require seven or more maintenance visits each growing season. The overall goal of the establishment maintenance plan should be to control weeds by not letting them reproduce, thereby reducing competition with the native plants for light, water and nutrients. It is imperative that the field crew have an understanding of a plant's life cycle so the appropriate maintenance strategy can be employed (Figures 4-3 and 4-4).

A. Life Cycle – The life cycle of various weedy plants dictates how to manage them. Some plants bloom early in the year and may need to be controlled in March and April, while others are best controlled in early fall, or even during the winter. In addition to the blooming period, knowing whether a plant is an annual, biennial, or perennial will guide effective management.

1. **Annual Species** – Many common weed species are annuals, meaning they germinate from seed, grow, reproduce, and die all within one year. Examples of annual weed species include foxtail, ragweed, and chicory. Mowing or hand pulling just before or while the plant is in flower is generally sufficient to control these species. Annuals take advantage of disturbance and can be expected to be heavily populated in a new planting, however they are not great competitors and will not be as big of a problem in the later years of a restoration project.
2. **Biennial Species** – Other weeds are biennial, meaning they germinate from seed and generally have only basal leaves (low to the ground) without flowers during the first year of growth. The second year, a mature plant is produced which flowers, reproduces, and dies. Examples of biennial weeds include Queen Anne's lace (also known as wild carrot), yellow and white sweet clover, and garlic mustard. These plants may be treated with herbicide or hand-pulled (with the root included)

in growth year one or early in growth year two, however any individuals that are not treated should be mown or otherwise removed just before or while the plant is in flower to ensure that it does not develop and distribute viable seed.

3. **Perennial Species** – Our most tenacious weeds are perennial; they bloom and produce seed year after year, storing energy in their roots over winter. Examples of perennial weeds include Canada thistle, cattails, most turf grasses, and curly dock. Herbicides are the best way to treat perennial weeds. Alternatively, perennial weeds may be hand pulled, but only if the entire root system is removed. Even if a perennial weed is cut back to the ground during the growing season, it typically contains enough energy in its roots to continue to grow year after year. Some invasive species such as Canada thistle spread by underground rhizomes (roots) and will continue to colonize even if mown and not allowed to set seed. Any perennial weeds that are not treated should be mown just before or while the plant is in flower to ensure that it does not develop and distribute viable seed.

### 4.01.02 Long-Term Maintenance Plan

Once a native planting area becomes established it will begin to out-compete many of the common annual and biennial weeds, though more aggressive weeds/invasive species will continuously be a threat to the health and aesthetic of any native planting area. Therefore it is the desire of the VILLAGE to ensure that any native planting area established within the Village of Lemont has a plan and an identified funding source for appropriate active management *in perpetuity*. Long-term native planting management strategies and responsible parties must be identified prior to approval of development plans proposing to use native plantings by the VILLAGE.

## 4.02 Maintenance Criteria

### 4.02.01 General Information

- A. Stewardship shall begin immediately after planting and continue for three (3) growing seasons or until Final Acceptance by the VILLAGE.
- B. The Natural Areas Contractor shall keep a log of all restoration activities performed during contract period, installation through stewardship, and shall submit it to the VILLAGE on a monthly basis.
- C. Chemicals used will have the lowest environmental impact for the task at hand. Organic or cultural practices will be used whenever practical.



Figure 4-1: Highly diverse and functioning natural area

**Control of Annual Weeds**

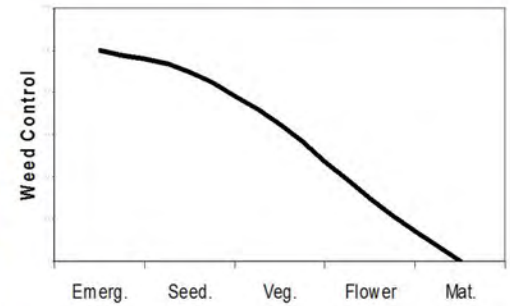


Figure 4-3: Annual weed control timeline

**Control of Perennial Weeds**

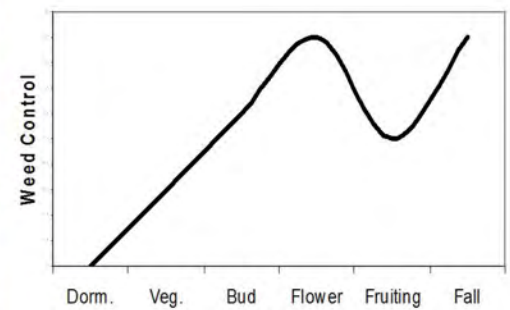


Figure 4-4: Perennial weed control timeline

Month	Visits by Crew	Herbicide	Brush Clearing	Mow	Collect/Disperse Seed
April	0-1	X	X		
May	1-2	X	X	X	X
June	1-2	X		X	X
July	1-2	X		X	
August	1-2	X		X	
September	0-1	X		X	
October	1-2	X	X	X	X
November	0-1	X	X		X
December through March	0-1	X	X		X

Figure 4-2: Suggested maintenance activities and recommended timeframe for natural areas



## 4.02.02 Native Planting Mowing

- A. All mowing shall be conducted in accordance with all applicable codes and by personnel with appropriate training in safety and in the use of the machinery being utilized.
- B. Mowing is a key aspect in achieving positive results. Mowing must be conducted by the Natural Areas Contractor on a consistent basis and must respond to seasonal weather. Vegetation shall be high-mown as follows:
  - 1. First Growing Season: Kept under twelve (12) inches. The VILLAGE recommends that the Developer budget for a **minimum** of five (5) mowings.
  - 2. Second Growing Season: Spot mow and observe. If non-native/weedy species are dominant, keep planting mowed at under eighteen (18) inches. The VILLAGE recommends that the Developer budget for a **minimum** of three (3) mowings.
  - 3. Third Growing Season: Spot mow and observe. If non-native/weedy species are dominant, keep planting mowed at under eighteen (18) inches.
- C. Mowing shall commence during late May/early June and subsequently four weeks apart or any time a large number of weed species begin to flower. Mowing shall be timed in a manner that prevents viable seed from being produced on site. Some species are able to develop viable seed when they are cut late in the flowering period.
- D. Mowing shall be conducted with a conventional rotary mower, sickle type mower, or a flail type mower. To reduce thatch, at no time shall more than six (6) inches (height) of vegetation be cut in a pass. Natural Areas Contractor shall ensure that cut materials are not allowed to drop seed or smother desired vegetation.
- E. On slopes that are too steep to mow, around structures (trees, fencing, buildings, etc.), and in areas that are too wet to mow, mowing shall be conducted with the use of a hand-held brush cutter or weed-whacker only. Damage caused to landscape material or other structures shall be repaired/replaced by the Natural Areas Contractor.

## 4.02.03 Herbicide Applications

- A. Spot Herbicide Applications
  - 1. Small scattered populations or individual specimens of undesirable species shall be controlled with spot herbicide applications. Large-scale colonization shall not be allowed.
    - a. Backpack Spray Treatments – Natural Areas Contractor shall utilize a 3-5 gallon backpack style sprayer, such as Solo, SP3, Field King or acceptable substitution (Figure 4-5).
    - b. Hand-wicking – In areas of high quality native vegetation where desirable species are

directly adjacent to targeted plants, or where the growth habit of the target plant makes it impossible to avoid off-target damage, the appropriate herbicide shall be selectively hand wiped onto the target plant utilizing a sponge-wicking applicator or a saturated cloth glove (Figure 4-6).

- 2. Site preparation and planting after herbicide applications shall be as per the Native Planting section of this document.
- B. Broadcast Herbicide Applications
  - 1. On larger sites where a broad-scale application is needed because large colonies of the target species have become established, broadcast applications by large tank-equipped spray-gun, all-terrain vehicle (ATV) or tractor may be utilized to treat undesirable species. The following methods are appropriate:
    - a. Broad-Spectrum Herbicide Broadcast Application – This method uses a large tank-equipped spray-gun and/or an ATV or tractor equipped with a boom-sprayer to apply large amounts of glyphosate, which will result in complete kill of all vegetation.
    - b. Selective Herbicide Broadcast Application – This method utilizes a large tank-equipped spray-gun and/or an ATV or tractor equipped with a boom-sprayer to apply large amounts of a selective herbicide, such as Ornamec, resulting in a complete kill of only those targeted species (in this case, grasses)
  - 2. A “large colony of target species” shall be defined as a target plant population whose aerial coverage is such that a broad-spectrum chemical can be broadcast while inflicting little damage to adjacent native vegetation.
  - 3. Site preparation and planting after herbicide applications shall be as per the Native Planting section of this document.
- C. Herbicide Application Timing
  - 1. Herbicide applications must be conducted by the Natural Areas Contractor on a consistent basis and must respond to seasonal weather and to the life cycle of each target species (Figure 4-7). Based upon the known life cycle of the most common non-native species that appear during restoration and the appropriate timeframes to conduct initial herbicide applications and follow-up applications, the VILLAGE recommends that the Developer budget for a **minimum** of seven (7) herbicide applications each growing season.





Figure 4-5: Herbicide application using backpack sprayers

The VILLAGE requires that all herbicides use a marker dye, such as Signal®, when applied in native planting areas to enable tracking of the application. The only exception is when applying herbicides within three feet of a roadway, sidewalk, structure or other feature where dyes may cause staining damage (staining should be temporary).



Figure 4-6: Gloves used for hand wicking

Target Species	Herbicides	Initial Herbicide Application	Follow-up Herbicide Application
Reed Canary Grass ( <i>Phalaris arundinacea</i> )	Sethoxydim* Aquatic Glyphosate	April 1st-May 31st	October 1st-Dormancy/Frost
Teasel Species ( <i>Dispsacus spp.</i> )	Triclopyr 3a*, Glyphosate	April 1st-May 31st	October 1st-Dormancy/Frost
Sweet Clover Species ( <i>Mellilotus spp.</i> )	2, 4-D*, Clopyralid	April 1st-May 31st	October 1st-Dormancy/Frost
Cattail Species ( <i>Typha spp.</i> )	Aquatic Imazapyr	July 1st-August 1st	Use Clopyralid as needed throughout growing season
Purple Loosestrife ( <i>Lythrum salicaria</i> )	Triclopyr 3a*, Aquatic Glyphosate	May 15th-July 15th	August 1st-September 1st
Non-native Thistle Species ( <i>Carduus, Cirsium, &amp; Onopordum spp.</i> )	Clopyralid	May 15th-July 15th	July 15th - August 15th
Common Reed ( <i>Phragmites australis</i> )	Aquatic Imazapyr	August 1st-September 1st	September 1st - September 30th
Honeysuckle Species ( <i>Lonicera spp.</i> )	Triclopyr 3a (Foliar Application)	May 15th-July 15th	July 15th-August 15th
	Glyphosate (Cut-Stump/Basal Bark Application)	November 15th-March 15th (During Dormancy)	Follow-up should be Foliar
Other Woody Species (Includes <i>Rhamnus spp.</i> )	Triclopyr 3a (Foliar Application)	May 15th-July 15th	July 15th - August 15th
	Triclopyr 4e (Cut-Stump/Basal Bark Application)	November 15th-March 15th (During Dormancy)	Follow-up should be Foliar

Figure 4-7: Herbicide application table by species



**4.02.04 Hand Weeding**

Hand weeding is simply removing by hand individual undesirable plants. Hand weeding will be necessary for maintaining native planting areas just as it is necessary for maintaining landscaped areas (Figure 4-8). Annual and second-year biennial weeds are often best controlled via hand weeding because their root systems are not as well-developed as perennial weeds, so they are easily pulled from the ground. It is often best to hand weed after a rain, when the roots are easily pulled from the ground. Hand weeding should be carefully performed (or not at all) in newly seeded areas to avoid further disturbance to the soil. Hand weeding is typically conducted in concert with herbicide applications.

- A. In the event that herbicide applications cannot, or should not, be performed due to social, cultural, environmental, or other verified reasons, target weed species shall be removed by hand.
  1. Species targeted for complete hand weeding shall include removal of all plant parts from the soil, including the above ground growth and all roots or rhizomes present in the ground.
  2. Species targeted for partial hand weeding shall include removal of plant reproductive parts (i.e. seed heads). Partial hand weeding shall be conducted in concert with, or shall be followed up with herbicide applications.
  3. Removed vegetative materials shall be discarded off-site or left on-site in a manner that will not allow regeneration or seed set of the removed species. Some species such as garlic mustard may set seed even after being removed from the ground while flowering. These species must be removed from the site. Transportation of removed vegetative materials shall meet Department of Agriculture standards/requirements.
  4. Hand weeding shall never result in excessive soil disturbance.
  5. If hand weeding is necessary, it shall at a minimum be conducted in the same intervals as is required for herbicide application timing.

**4.02.05 Treatment of Woody Species**

- A. The Natural Areas Contractor shall conduct woody species herbicide treatments to all re-sprouts, re-growth, or other remaining live plants of all non-native or aggressive native woody species throughout stewardship operations until performance criteria have been achieved (See Section 5).
- B. Woody species treatment methods during the growing season may be a foliar application using an appropriate herbicide, such as Garlon 3a (Figure 4-9). Damage to surrounding vegetation due to re-sprout treatments shall be repaired by the Natural Areas Contractor.
- C. Woody species herbicide treatments during the dormant season may be applied with cut-stem and/or

basal bark application using an appropriate herbicide, such as Garlon 4e. Damage to surrounding vegetation due to re-sprout treatments shall be repaired by the Natural Areas Contractor.

1. **Hand Cutting/Cut-Stump Treatment:** Chain saws, brush clearing saws, handsaws, and loppers may be used (Figure 4-10). Upon written approval by the Owner/Owner's Representative, small walk behind mower-type brush cutters may be used provided that their use does not result in rutting or pitting of the soil while in operation.
    - a. Cut woody target species shall be treated with an herbicide mixture. After cutting down the target species apply herbicide, such as Garlon 4e in a 20-30% (or as stated on the product label) solution in basal oil, to the stump. *Lonicera spp.* shall be treated with Roundup in a 25-50% solution, to the stump. Treat the cut area around the edge with herbicide so the cambium layer will take up the active ingredient. Herbicide shall be applied immediately after cutting.
  2. **Basal Bark:** Involves herbicide application directly to the trunk of the woody target species that are one inch or less at the base. Apply herbicide directly to the tree trunk, around the entire circumference, at 6" above the soil until thoroughly wet near the ground plane, but not to the point of runoff. Apply during dormancy, except when snow or water prevents spraying to the ground plane. Optimal results are achieved when applications are made to young stems which have not developed thick bark.
- D. Wherever possible herbicide applications shall be accomplished by utilizing wick or sponge-type applicators (Figure 4-11).
  - E. All cuttings longer than two (2) feet in length or larger than one (1) inch in diameter shall be removed from the project site or burned on site. Smaller cuttings and debris from shredding or chipping may be left on site to decompose or to be consumed by prescribed fire (if applicable). Cuttings and debris shall not be allowed to accumulate to a depth that will smother existing desirable native species, prevent existing desirable native species from emerging, or prevent appropriate seed-to-soil contact in newly seeded areas (approximately one-half inch maximum depth).
  - F. When working within woodland areas or areas that contained significant brush and tree removals as part of the original restoration, the VILLAGE recommends that the Developer budget for a minimum of three (3) woody re-sprout treatments each growing season



Figure 4-8: A Natural areas maintenance crew hand pulling weeds



Figure 4-9: Basal bark treatment



Figure 4-10: Hand cutting invasive brush with chainsaws and appropriate safety gear



Figure 4-11: Stump treatment with sponge

**4.02.06 Landscape Bed Maintenance**

All landscape beds that occur within designated natural areas shall be maintained by the Natural Areas Contractor. This includes all trees, shrubs, and perennial beds (Figure 4-12). The VILLAGE has provided the minimum criteria below related to regular maintenance of Landscape Beds within all natural areas.

**A. General**

1. Tree rings and/or other areas of non-lawn landscape containing plants within designated management areas shall be considered a "Landscape Bed" for the purposes of this document.

**B. Mulch Management**

1. Landscape beds shall receive a new mulch dressing by May 1<sup>st</sup> of each growing season. Mulch dressing shall be applied at a minimum of one (1) inch thick.
2. Landscape bed mulch shall be turned over a minimum of four (4) times per growing season.

**C. Edging**

1. Landscaped beds and tree rings shall be edged during the first maintenance visit and as otherwise necessary throughout each growing seasons. The VILLAGE recommends that the Developer budget for a minimum of three (3) landscape bed and tree ring edging occurrences each growing season (Figure 4-13).

**D. Pruning and Dead-Heading**

1. Shrubs, ornamental trees, and qualified canopy trees shall be assessed/pruned a minimum of three (3) times per growing season to remove dead or damaged branches, to develop a natural form and improve the health of the plant. Qualified canopy trees shall be those three (3) inches DBH or smaller.
2. Spent flower heads of perennial flowering plants shall be removed a minimum of three (3) times per growing season.
3. All herbaceous plant material (flowers and grasses) shall be cut back to ground level and removed from the site by November 30<sup>th</sup> of each growing season, or as otherwise agreed to in writing by the VILLAGE.

**E. Hand Weeding**

1. In the event that weed content exceeds a height of four (4) inches and/or herbicide applications cannot, or should not, be performed due to social, cultural, environmental, or other verified reasons, target weed species shall be removed from landscape beds by hand.
  - a. The VILLAGE recommends that the Developer budget for a minimum of six (6) hand weeding applications within landscape beds each growing season.
  - b. Species targeted for complete hand weeding shall include removal of all plant parts from the soil, including the above ground growth and all

roots or rhizomes present in the ground.

- c. Species targeted for partial hand weeding shall include removal of plant reproductive parts (e.g. seed heads). Partial hand weeding shall be conducted in concert with, or shall be followed up with herbicide applications.
2. Hand weeding of landscape beds shall occur as often as necessary to ensure that landscape beds appear tidy and weed-free.
  3. Removed vegetative materials shall be discarded off-site or left on-site in a manner that will not allow regeneration or seed set of the removed species. Transportation of removed vegetative materials shall meet Department of Agriculture standards/requirements. Hand weeding shall never result in excessive soil disturbance. For highly visible public sites the VILLAGE reserves the right to direct the Contractor to collect and dispose of all hand-pulled vegetation off site.

**4.02.07 Over-seeding and Re-Planting**

Over-seeding or re-planting may be necessary for compliance with the performance section of this document. Follow the criteria for seeding or planting as outlined earlier in the guideline.

**4.02.08 Seed Collection & Distribution**

Once a natural area becomes established, seed collection and distribution should become a regular part of the management plan (Figures 4-14 and 4-15). Native seed should be collected at appropriate times for each species. Disperse collected seed over the site after a spring or fall clean up or after conducting prescribed fire to improve density or biodiversity. Collected seed can also be seeded in bare spots caused by natural disturbance, repairs, or herbicide applications.

Seed collection and distribution is a great volunteer activity., Offering volunteer opportunities encourages the surrounding community to become more engaged in the establishment of the natural area(Figure 4-16).

**4.02.09 Prescribed Fire**

Fire was a frequent part of pre-settlement native ecosystems and maintained the integrity of natural areas. Fire stimulates plant growth, prevents unwanted brush encroachment, and recycles nutrients. While fire was historically caused by lightning strikes and used by Native Americans, fire suppression post-European settlement allowed brush to invade open prairies and woodlands, shading out many sun-loving plants. In native planting management, prescribed fire is one of the most efficient and inexpensive ways to renew and protect our natural areas while simultaneously increasing site aesthetics.

Newly seeded areas should be allowed to establish for 2-3 growing seasons prior to prescribed fire application. Prescribed



Figure 4-12: Maintained Native Landscape



Figure 4-13: Distinct landscape bed edge



Figure 4-14: Seed collection



Figure 4-15: Native seed



Figure 4-16: Volunteers assisting with native seed collecting and dispersing

fires are typically conducted between the months of November and April, however the VILLAGE prefers that burning be conducted in the fall to promote better wildflower production and to minimize the impact on nesting birds and other animals. We recommend that when areas become burnable that the entire area be burned annually for 5-7 years to aid in plant establishment. Once the area is well established, an alternating burn schedule can be implemented if desired, doing so maintains unburned areas as wildlife refugia.

Prescribed fire should be conducted by highly trained personnel with appropriate permits and following an approved burn plan (Figure 4-17). The VILLAGE has provided minimum criteria regarding prescribed fire below.

#### A. GENERAL

1. Prescribed fire may be employed as a native planting management tool with written authorization from the VILLAGE and is contingent upon attainment of all required permits by the Natural Areas Contractor.

#### B. PERSONNEL/TRAINING

1. It is required to have highly trained and experienced employees working on a prescribed fire (Figure 4-18). The Natural Areas Contractor must meet the requirements specified under "Contractor Qualifications;" documentation of fully trained and experienced personnel shall be submitted to the VILLAGE prior to approval.
2. Refresher courses for NWCG levels are required annually. To maintain certification individuals need to have completed the S130/S190 courses (once), pass at least a moderate level pack test (carry forty-five (45) pounds three (3) miles in forty-five (45) minutes), and attend a yearly one-day refresher course. Documentation that certification maintenance training for all proposed burn crew members has been completed shall be submitted to the VILLAGE prior to approval. Refresher courses for other NWCG positions vary.
3. Burn plans shall be written/reviewed and approved by the burn boss.
4. The National Wildfire Coordinating Group (NWCG) standards shall be followed for prescribed fire.

#### C. EQUIPMENT

1. The Natural Areas Contractor shall have in their possession the following equipment prior to plan approval unless otherwise agreed upon by the VILLAGE:
  - a. Two type 6 engines
  - b. Two type 7, 6 wheel drive ATV engines
  - c. One 500 gallon water tender
  - d. One fire pump capable of delivering sufficient water pressure at 1000 feet to suppress an

escaped fire

- e. 1000 feet of collapsible 1" fire hose with nozzles
- f. Two-way radios for all personnel involved in the fire, whether on the line or not (one [1] additional radio may be required for VILLAGE personnel to monitor activity)
- g. All necessary personal protective equipment for all personnel to meet NWCG guidelines.

#### D. INSURANCE

1. "A" insurance rating with coverage for at least \$5,000,000.00 (five million) dollars of general liability insurance and **excess general liability for "Prescribed Fire Operations" with a minimum \$2,000,000.00 (two million) per occurrence limit.**
2. The Natural Areas Contractor shall provide the Village with a certificate of insurance and name them as additional insured.
3. **The Natural Areas Contractor shall list prescribed fire on the certificate as the activity is covered.**

#### E. ROADSIDE VISIBILITY MATERIALS

1. Roadside visibility materials are essential if the fire is near a roadway. Natural Areas Contractor shall provide and install temporary warning signage along all roadways bordering the burn unit (Figure 4-19). Warning signage shall be visible by road traffic and shall display the Natural Areas Contractor's contact information. All signage on public roadways shall conform to all applicable local and Illinois DOT signage specifications.
2. Stop/Go paddle
3. Construction cones
4. All personnel participating in a prescribed fire within close proximity of a roadway shall wear appropriate reflective work vests.

#### F. BURN PLAN

1. Prior to burning, the Natural Areas Contractor shall complete and submit a burn plan for approval by the EPA, the VILLAGE and any other agencies with jurisdiction.
2. Because of the large degree of variation in the complexity of prescribed burns, there are no standardized burn plans, only standardized information. A burn plan can be short or long, depending on the complexity of the proposed burn and the desires of the ecologist/burn boss. At a minimum, the VILLAGE requires the following information be included in the burn plan:
  - a. The location of all smoke sensitive sites, including but not limited to schools, daycares, recreation centers, senior centers, and healthcare offices or facilities within one mile of the proposed burn site's perimeter shall be



Figure 4-17: Prescribed fire being executed by trained professionals with appropriate equipment



Figure 4-18: Only trained personnel with proper safety equipment can work on burn sites



Figure 4-19: Proper safety signage



documented on a site map.

#### G. PERMISSIONS/PERMITS

1. The Natural Areas Contractor shall gain permissions and permits from all applicable federal, state, county, and local agencies and government entities prior to burning.

#### H. PUBLIC NOTIFICATION

1. The Natural Areas Contractor shall notify adjacent neighbors in writing that a prescribed burn will be taking place and shall include an anticipated schedule. The notification must include the Contractor's phone number and an invitation to be added to a notification call list. Contractor will be responsible for notifying anyone on the notification call list 24 hours in advance of the burn.
2. The Natural Areas Contractor shall contact any identified smoke sensitive sites in writing and by phone at a minimum of two weeks prior to the scheduled burn and again 24 hours in advance of the burn.
3. The Natural Areas Contractor shall notify the VILLAGE 48 hours in advance of the burn.

#### I. EXECUTION

1. The prescribed fire shall be executed in accordance with an approved burn plan.

2. The prescribed fire shall achieve the goals as stated in the approved burn plan.
3. The Natural Areas Contractor shall mop up all burning material to 100% black after the main fire has passed. There shall be no burning materials when the Natural Areas Contractor leaves the site.
4. The Natural Areas Contractor shall be available to return to the site within 2 hours following mop up operations to extinguish burning materials. The person selected to return to the site must have access to all crew members in the event that they must be re-deployed to the project site.



Figure 5-20: Burn platforms are often utilized to protect native herbaceous material that may be dormant but still present





Figure 5-21: Example of fire exclusion



SECTION

# 5

## PERFORMANCE CRITERIA & MONITORING

Measuring success of a native planting can prove difficult, however it is critical that we define what success looks like to ensure consistent, high-quality installations. In an effort to establish conforming and successful native planting areas that are attractive to the community and beneficial to the environment, the following section outlines the minimum baseline performance criteria and monitoring efforts that should be included in all native planting plans and specifications.

### 5.01 Performance and VILLAGE Acceptance

Performance criteria, also known as performance standards, define whether or not a project has been successful in meeting certain goals or the project's intent. The goals can be different for each project and may include creating habitat for wildlife, improving plant biodiversity, increasing stormwater holding capacity, decreasing nutrient loading into local water systems, or improving public space aesthetics. There is no perfect, one-size-fits-all system for measuring success in native planting establishment. In addition to traditional performance criteria based upon monitoring data, the VILLAGE also requires each Developer to meet the intent of this document as detailed below.

#### 5.01.01 Stated Intent within Native Planting Areas

- A. Brush and tree clearing priorities are to approach eradication of invasive woody species and thin existing stands of native woody species. The intent is to allow sunlight to penetrate the ground and eliminate threats from invasive species or aggressive native species, while protecting existing trees to remain from damage.
- B. Native planting priorities are to prepare planting areas for good seed-to-soil contact, install an even coverage of high-quality native seed/plants, and protect planting areas from erosion. The intent is to develop a dense stand of native vegetation with minimal weed content.
- C. Native planting management priorities are to approach eradication of invasive and weedy species, establish and encourage the healthy growth of native species, and increase overall site biodiversity. This document describes the standards for acceptance, monitoring, reporting, performance, and remediation for a successful management program. The intent is to develop a dense stand of desirable native species with minimal weed content and no threat from invasive species or aggressive native species.
- D. Prescribed fire priorities are to achieve specific ecological and/or aesthetic outcomes through the safe application of fire under a comprehensive prescription without causing damage to structures, property, cultural resources, desirable woody vegetation, desirable deadwood, desirable fire-negative herbaceous species, or other desirable features. The intent is to clear standing dormant herbaceous biomass and/or leaf litter so that sunlight can penetrate to the soil surface and that other management tasks can be performed more efficiently.

#### 5.01.02 Performance Criteria

- A. At no time throughout management activities shall aggressive native species, non-native species, nor invasive/exotic species be allowed to become established on the site and/or be allowed to colonize. Here "establish" means that the species is allowed to grow, thrive, and reproduce.
- B. Within three (3) months of seed installation, the total vegetation cover in all areas seeded with cover crop shall be greater to or equal than seventy-five percent (75%) as measured by general visual assessment. If seed installation is completed in the fall, this standard shall be met by June 1<sup>st</sup> of the following year.
- C. Goals for the end of the first growing season
  1. Twenty-five percent (25%) of the native species installed via seed shall be alive and apparent.
  2. None of the dominant species within the seeded areas shall be invasive/exotic species (See Appendix D).
  3. No less than eighty percent (80%) of any live native herbaceous plant material installed shall be alive and in vigorous condition. If less than eighty percent (80%) of any live native herbaceous plant material installed survive the first full growing season, the plants shall be replaced so that the eighty percent (80%) criteria is achieved.
- D. Goal for the end of the second growing season, in addition to fulfilling the above:
  1. Fifty percent (50%) of the native species installed via seed shall be alive and apparent.
  2. Native cover within the seeded area(s) shall be at least fifty percent (50%), but shall not be dominated with aggressive native species including, but not limited to Ragweed (*Artemisia spp.*), Horsetail (*Erigeron canadensis*), Foxtail (*Alopecurus spp.* & *Setaria spp.*), Cottonwood (*Populus deltoids*), Box Elder (*Acer negundo*), Sandbar Willow (*Salix interior*), Cattails (*Typha spp.*), Barnyard Grass (*Echinochloa crusgalli*), etc.
- E. By the end of the third growing season, in addition to fulfilling the above:
  1. For each planting zone, seventy-five percent (75%) of the native species installed via seed shall be alive and apparent. None of the dominant species within the planting zone(s) shall be non-native or invasive/exotic species (See Appendix "A"). Native cover within the planting area(s) shall be at least eighty percent (80%), but shall not be dominated with aggressive native species including, but not limited to Ragweed (*Artemisia spp.*), Horsetail (*Erigeron canadensis*),

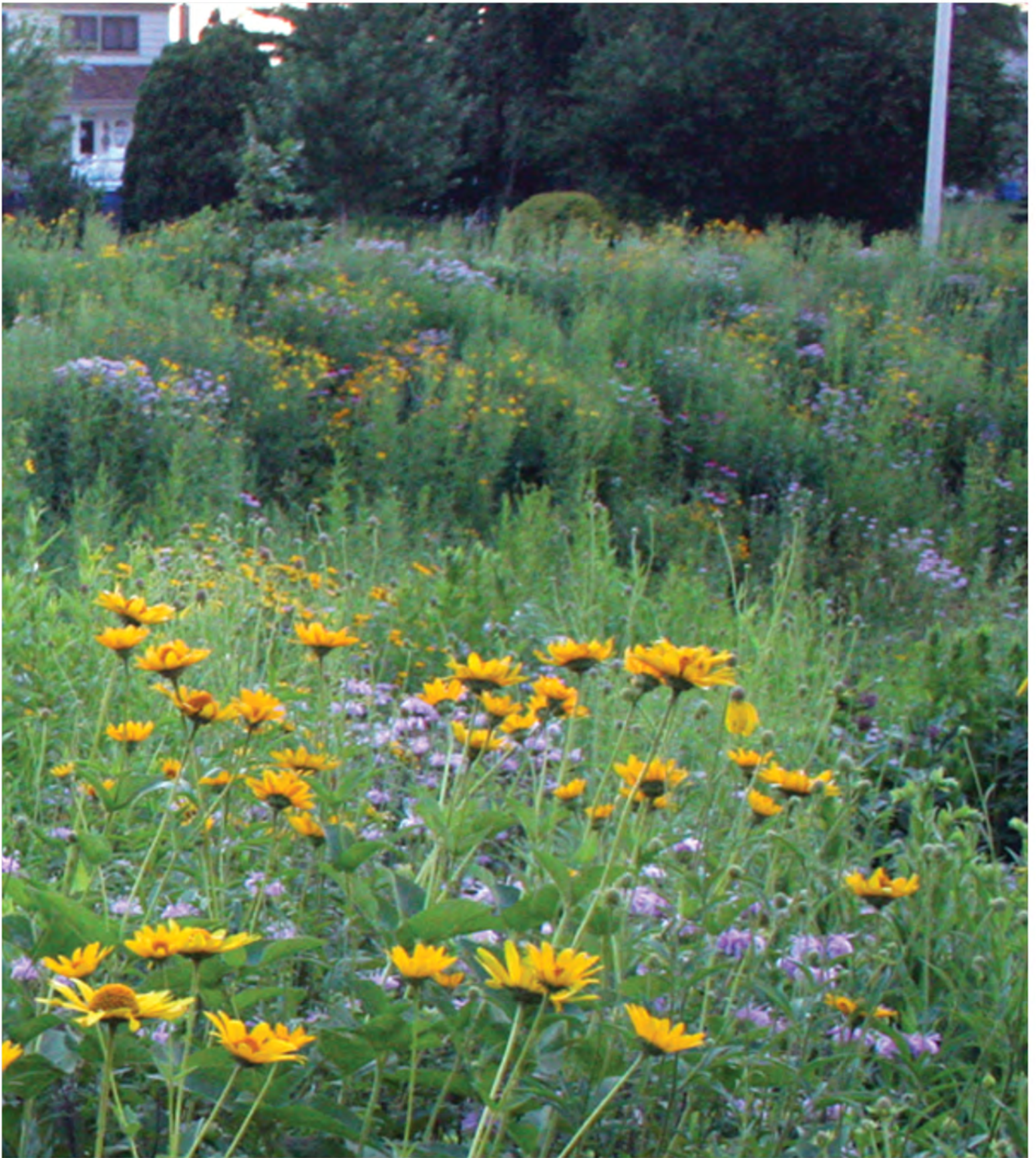


Figure 5-1: A healthy and functioning natural area with high diversity that meets performance criteria

Foxtail (*Alopecurus spp.* & *Setaria spp.*), Cottonwood (*Populus deltoids*), Box Elder (*Acer negundo*), Sandbar Willow (*Salix interior*), Cattails (*Typha spp.*), Barnyard Grass (*Echinochloa crusgalli*), etc.

2. There shall be no area(s) greater than 0.25 m<sup>2</sup> that are devoid of vegetation.
3. There shall be no rills or gullies present throughout the project area.
4. The following FQA standards shall be achieved:
  - a. Based on the results of the meander survey, the goal is to have the Native Mean C-value increase each successive year after planting.
  - b. Based on the meander survey, the goal is to have the Native FQI increase each successive year.
  - c. By the end of the third growing season, each planting zone shall achieve or exceed the following FQA values (See Figure 5-4 for standard mix performance criteria calculations):
    - i. Native FQI – 21.0
    - ii. Native Mean C Value – 3.5
    - iii. The Native Mean W within any wetland zone shall be less than zero.

5.01.03 FORMAL ACCEPTANCE CRITERIA

- A. At least five (5) days prior to the desired date of inspection, the Developer shall submit a written request for inspection to VILLAGE.
- B. Final Acceptance: The work shall be considered 100% complete after the year three performance criteria have been satisfied.

PERFORMANCE CRITERIA CALCULATIONS FOR STANDARD MIXES (APPENDIX A)				
Species List	Native FQI	Total FQI	Native Mean C Value	Total C Value
Buffalo Grass Lawn Seed Mix	0	0	0	0
Transitional Buffer Seed Mix (Dry-Mesic Soils)	5.7	3.4	4.0	1.8
Transitional Buffer Seed Mix (Mesic-Wet Soils)	7.5	4.5	3.8	1.7
Low Profile Prairie Seed Mix	37.6	22.6	6.0	2.7
Dry Bottom Detention Basin Seed Mix	31.3	18.8	4.8	2.2
Wetland Seed Mix	34.4	20.6	5.1	2.3
Emergent Seed Mix	28.5	17.1	5.5	2.5
Shoreline Plug Mix	30.2	18.1	5.9	2.7

Figure 5-2

## 5.02 Monitoring and Reporting

Natural areas monitoring is a helpful and necessary tool to track the progress of a native planting, restoration or the health of an established natural area. The results of monitoring can inform future management actions by providing information on native and invasive species presence and coverage, herbivory, erosion, hydrological, wildlife, or aesthetic issues. The VILLAGE has determined that the minimum criteria for monitoring and reporting regarding native planting projects are as detailed below.

- A. All native planting areas shall be monitored annually for a three-year period to ensure successful establishment of the plantings. The primary objective of the monitoring program is to track the success of the planted species over the 3-year period of regularly scheduled monitoring sessions. The monitoring documents changes in plant community composition and reveals the need for management changes to improve floristic quality. Specific goals of the monitoring are to determine the vegetative species present, the percent cover by vegetation, and to identify hydrological and erosion problems.
- B. Perform at least one (1) *qualitative* monitoring visit within the native planting areas. Monitoring may occur anytime during the months of May-September. Meander survey methods will be utilized to gather data required for reporting to the project stakeholders. Data gathered during monitoring activities shall include:
  1. Meander Survey Methodology (Figure 5-3)
    - a. Approximate total, native, and non-native/weedy vegetative coverage throughout each planting zone.
    - b. Produce plant inventories for the entire site and each planting zone if required. This data will be used to compile mean coefficients of conservatism values, Floristic Quality Indices (FQI), and mean wetness values.
    - c. Assess tree and shrub survival rates.
    - d. Take representative site photographs.
- C. Perform at least one (1) *quantitative* monitoring visit within the native planting areas. Monitoring may occur anytime during the months of May-September. Permanent transect and quadrat survey methods will be utilized to gather data required for determining final success criteria. Data gathered during monitoring activities shall include:
  1. Straight Line Transect Sampling (Figures 5-4 and 5-5)
    - a. Gather vegetative data from a series of quadrats located along permanent straight line transects resulting in 30 or



Figure 5-3: Meander survey example

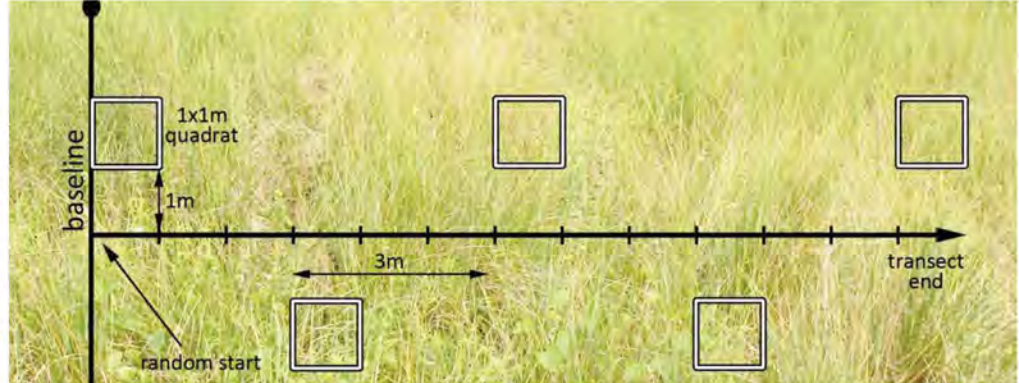


Figure 5-4: Diagram of straight line transect sampling



Figure 5-5: Individual performing a straight line transect study



- more quadrats per each planting zone or a maximum of 20% of the area planting zone.
  - b. Data collected shall be used to validate or dispute visual assessments of vegetative coverage and assessments of vegetative dominance, coverage and distribution.
  - c. This level of sampling and replication should be enough to overcome any uncontrollable environmental variation.
- D. Prepare one (1) annual monitoring report by March 31<sup>st</sup> of the following year. The annual monitoring report shall contain the following information:
1. Introduction
    - a. Site history leading up to the current project, including construction and management to date.
    - b. Site description, including a street address (if applicable), County, Section, Township, and Range.
    - c. A site location map.
    - d. Permit numbers and department/county of issue (if applicable).
  2. Vegetation Monitoring
    - a. Methods
      - i. Summarize the methods used for vegetation monitoring, including the survey dates.
    - b. Results
      - i. Summarize the results of the vegetation monitoring.
    - c. Provide Data Summaries, including:
      - i. Floristic Quality Assessment Data for the Baseline Meander Survey (if available)
      - ii. Floristic Quality Assessment Data for the Meander & Transect Survey:
        - o Native Mean Coefficient of Conservatism Value (Native Mean C Value)
        - o Native Floristic Quality Index (Native FQI)
        - o Relative Importance Value of all plant species (RIVn)
        - o A comparison table that lists previous years' data (if available) with current year's data as both compare with performance criteria.
        - o Live Plant Material:
          - Report on the condition of any native woody live plant material
  3. Discussion
    - a. Discuss the work performed as part of ongoing stewardship during the previous calendar year (if applicable).
    - b. Compare the current year's data with data from the previous years (if available).
    - c. Compare current year's results against the performance criteria.
    - d. Describe any deficiencies in the stewardship activities to date that are hindering the site's ability to meet the performance criteria and propose detailed corrective actions.
    - e. Discuss in detail the stewardship activities that are recommended in the upcoming year.
    - f. Conclusion
  4. Exhibits
    - a. Copies of any applicable permits.
    - b. Original site plan, including topography, planting zones, tree locations, etc.
    - c. Adapted site plan showing areas of deficiency, areas of erosion, etc.
    - d. Original species lists installed
    - e. Floristic Quality Assessment data tables

### 5.03 Remediation & Formal Acceptance

If native planting areas fail to meet the terms of the performance criteria, the Natural Areas Contractor should develop and submit a remedial action plan that takes into consideration the site goals and specific deficiencies. The contractor will implement the approved remedial action plan and submit a report that describes the remedial action taken. Final acceptance is not granted until all planting areas meet performance criteria or meet the stated intent of the project to the satisfaction of the VILLAGE. Even after formal acceptance, natural areas need to be maintained in perpetuity.







# NATIVE PLANTING GUIDELINE APPENDICES

- A: Native Seed and Plant Mixes**
- B: Contact Information for Local Professional Natural Areas Contractors**
- C: Contact Information for Regional Native Plant & Seed Suppliers**
- D: Invasive Species List**
- E: Submittal Checklist**
- F: Examples of Installations**
- G: Hydrograph Information**
- H: References & Additional Information**
- I: Glossary**

# NATIVE SEED AND PLANT MIXES

## Buffalo Grass Lawn Seed Mix (Dry - Mesic Soils)

MIX STATISTICS																		
<b>Base Mix Without Supplemental Plugs</b>																		
Average Mix Height	0.5'	<b>Mix Description:</b> Pizzo's Buffalo Grass Lawn Mix provides an alternative to traditional high-maintenance turf grass, such as Kentucky Bluegrass, Fescue, and Rye. While not thought to be locally native to the Chicago Region (it is known to be native to Southern Illinois and in the Western U.S.), Bowie is a cultivar that has the ability to survive colder northern climates. Unlike traditional high-maintenance turf grass, Buffalo Grass is a slow grower with a maximum height of 4-8" requiring little or no mowing and less than 1" of water per week. It prefers full sun, however it will survive in partial or dappled shade conditions. Buffalo Grass is a warm-season grass, which means it will go dormant (turns golden brown) in the fall and takes approximately a month longer to green-up in the spring when compared to traditional turf grass. Seeding of this mix should <b>only</b> occur in late spring/early summer when the soil temperatures reach 60-70° (typically late May - early July).																
Median Mix Height	0.5'																	
Mix Height Mode (# of Occurrences in Mix)	0.5' (1)																	
Number of Native Species in Mix	1																	
Lbs/Acre of Native Seed	100.00																	
Protegeules per Square Foot	2115.70																	
Native FQI	0																	
Native Mean C Value	0																	
Native Mean W Value	4																	
National Wetland Category	Facultative - Equally likely to occur in wetlands or uplands (estimated 34% - 66% probability)																	
<b>Grasses, Sedges, &amp; Rushes (Monocots)</b>																		
ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
BUCDAC	<i>Buchloe dactyloides</i> BOWIE	BOWIE BUFFALO GRASS	0	4	FUPL-	4-8" (5")	N/A							57,600	1600.0000	100.00	100.00%	100.00%
<b>Monocot Subtotals</b>																100.00	100.00%	100.00%
<b>Dicot Subtotals</b>																0.00	0.00%	0.00%
<b>BASE MIX TOTALS</b>																100.00	100.00%	100.00%

**Notes:**  
 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre  
 2.) Prepare soil seedbed the same as for traditional turf seeding  
 3.) Apply starter fertilizer the same as for traditional turf seeding  
 4.) Because of the seeding timeframe, temporary irrigation should be provided until establishment  
 5.) \*\*At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop\*\*

## Transitional Buffer Seed Mix (Dry - Mesic Soils)

MIX STATISTICS																		
<b>Base Mix Without Supplemental Plugs</b>																		
Average Mix Height	1.46'	<b>Mix Description:</b> Pizzo's Transitional Buffer Mix is designed as a short-grass native planting that can be installed between low, flat areas (turf grass areas, sidewalks, etc.) and the taller, more diverse prairie areas. Providing this buffer achieves multiple things: 1.) Since some taller prairie species can "flop" and/or look "leggy" at the base, this short-grass buffer provides space so that taller plants will not flop onto the lawn or pavement, and it will also provide a visual screen to the lower, unattractive portion of the prairie; 2.) This buffer is easy to maintain with broadleaf herbicides, which gives a neat, "cared for" appearance that establishes a defined edge to the prairie; and 3.) Provides an all-grass buffer between lawn and prairie that will protect the broadleaf wildflowers in the prairie from annual "ween'n'feed" applications (which contain a broadleaf herbicide) to the lawn. The grasses in this mix are warm-season grasses, which means they will go dormant (turn golden brown) in the fall. Seeding of this mix should only occur in spring (typically before June 15th).																
Median Mix Height	0/0																	
Mix Height Mode (# of Occurrences in Mix)	2.5' (1), 0.5' (1)																	
Number of Native Species in Mix	2																	
Lbs/Acre of Native Seed	62.00																	
Protegeules per Square Foot	174.55																	
Native FQI	5.7																	
Native Mean C Value	4																	
Native Mean W Value	4.5																	
National Wetland Category	Obligate Upland - Occurs almost never in wetlands under natural conditions (estimated <1% probability)																	
<b>Grasses, Sedges, &amp; Rushes (Monocots)</b>																		
ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
BOUCUR	<i>Bouteloua curtipendula</i>	SIDE-OATS GRAMA	8	5	UPL	2-3' (2.5')	N/A							6,000	960.0000	60.00	96.77%	75.76%
BUCDAC	<i>Buchloe dactyloides</i> BOWIE	BOWIE BUFFALO GRASS	0	4	FUPL-	6-8" (5")	N/A							57,600	32.0000	2.00	3.23%	24.24%
<b>Monocot Subtotals</b>																62.00	100.00%	100.00%
<b>Dicot Subtotals</b>																0.00	0.00%	0.00%
<b>BASE MIX TOTALS</b>																62.00	100.00%	100.00%

## Transitional Buffer Seed Mix (Mesic-Wet Soils)

MIX STATISTICS																		
<b>Base Mix Without Supplemental Plugs</b>																		
Average Mix Height	2.23'	<b>Mix Description:</b> Pizzo's Transitional Buffer Mix is designed as a short-grass native planting that can be installed between low, flat areas (turf grass areas, sidewalks, etc.) and the taller, more diverse prairie areas. Providing this buffer achieves multiple things: 1.) Since some taller prairie species can "flop" and/or look "leggy" at the base, this short-grass buffer provides space so that taller plants will not flop onto the lawn or pavement, and it will also provide a visual screen to the lower, unattractive portion of the prairie; 2.) This buffer is easy to maintain with broadleaf herbicides, which gives a neat, "cared for" appearance that establishes a defined edge to the prairie; and 3.) Provides an all-grass buffer between lawn and prairie that will protect the broadleaf wildflowers in the prairie from annual "ween'n'feed" applications (which contain a broadleaf herbicide) to the lawn. The grasses in this mix are warm-season grasses, which means they will go dormant (turn golden brown) in the fall. Seeding of this mix should <b>only</b> occur in spring (typically before June 15th).																
Median Mix Height	3.00'																	
Mix Height Mode (# of Occurrences in Mix)	3' (2), 2.5' (1), 0.5' (1)																	
Number of Native Species in Mix	4																	
Lbs/Acre of Native Seed	38.00																	
Protegeules per Square Foot	222.30																	
Native FQI	7.5																	
Native Mean C Value	3.8																	
Native Mean W Value	2																	
National Wetland Category	Facultative (+) - Equally likely to occur in wetlands or uplands (estimated 34% - 66% probability). The "+" sign denotes that this mix generally has a lesser estimated probability of occurring in wetlands than the "Facultative Wetland" general indicator, but a greater estimated probability of occurring in wetlands than a mix having the "Facultative" general indicator.																	
<b>Grasses, Sedges, &amp; Rushes (Monocots)</b>																		
ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
ANDSCO	<i>Andropogon scoparius</i>	LITTLE BLUESTEM GRASS	5	4	FACU-	2-3' (3)	N/A							15,000	320.0000	20.00	52.63%	49.57%
BOUCUR	<i>Bouteloua curtipendula</i>	SIDE-OATS GRAMA	8	5	UPL	2-3' (2.5')	N/A							6,000	240.0000	15.00	39.47%	14.87%
BUCDAC	<i>Buchloe dactyloides</i> BOWIE	BOWIE BUFFALO GRASS	0	4	FUPL-	6-8" (5")	N/A							57,600	32.0000	2.00	5.26%	19.04%
CVVULP	<i>Carex vulpinoidea</i>	BROWN FOX SEDGE	2	-5	OBL	2-4' (3)	N/A							100,000	16.0000	1.00	2.63%	16.52%
<b>Monocot Subtotals</b>																38.00	100.00%	100.00%
<b>Dicot Subtotals</b>																0.00	0.00%	0.00%
<b>BASE MIX TOTALS</b>																38.00	100.00%	100.00%

**Notes:**  
 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre  
 2.) For spring planting, Pizzo recommends installing a cover crop of Seed Oats (*Avena sativa*) with the above seed mix at 40 lbs/acre  
 3.) For fall planting, Pizzo recommends install a cover crop of ReGreen (a Winter Wheat x Wheatgrass Sterile Hybrid) with the above mix at 50 lbs/acre  
 4.) \*\*At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop\*\*

# APPENDIX A - NATIVE SEED AND PLANT MIXES

## Low Profile Prairie Seed Mix (Mesic Soils)

### MIX STATISTICS

#### Base Mix Without Supplemental Plugs

Average Mix Height	3.18'
Median Mix Height	3.00'
Mix Height Mode (% of Occurrences in Mix)	3.0' (12%), 4.0' (9%), 3.0' (6.5' (4)), 2.5' (3), 3.5' (2), 1.5' (1)
Number of Native Species in Mix	39
Lbs/Acre of Native Seed	27.55
Propagules per Square Foot	126.44
Native PFI	37.6
Native Mean C Value	0
Native Mean W Value	3.0
National Wetland Category	Facultative Upland - Occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1% - 33% probability)

**Mix Description:** Pizzo's Low Profile Prairie Seed Mix is designed for sunny areas that remain mesic-dry for most of the growing season. This mix is composed of a diverse collection of shorter-profile prairie grass and wildflower species, and is ideal for areas where taller vegetation is not appropriate. Over 61% of the seeds in this mix typically grow to an average high of 3' or less and over 48% of the mix is composed of wildflowers that will provide an array of blooms from April through October. When installed and maintained correctly this mix will typically begin flowering in its second growing season, starting with the yellow blooms of annual Partridge Pea and biennial Black-Eyed Susan, with additional more colorful permanent species appearing in years 3-5. This mix can be supplemented with the recommended plug list provided below to add diversity, color, and resilience to the long-term health of your prairie.

### Grasses, Sedges, & Rushes (Monocots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT	COLOR	BLOOM TIME												SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
						Min-Max (ft. local)		A	M	J	J	A	S	O	by Weight	by Seed Count								
ANCSO	<i>Andropogon scoparius</i>	LITTLE BLUESTEM GRASS	5	4	FACU-	1-2' (1.5')	N/A												15,000	96,000.00	5.00	21.77%	26.14%	
BOUCUR	<i>Bouteloua curtipendula</i>	SIDE-OATS GRAMA	6	5	UPL	2-3' (2.5')	N/A												6,000	192,000.00	12.00	43.55%	23.92%	
ELYCAN	<i>Elymus canadensis</i>	CANADA WILD RYE	4	1	FAC-	3-5' (3.5')	N/A												5,200	160,000.00	1.00	3.69%	1.51%	
PANVR	<i>Panicum virgatum</i>	SWITCH GRASS	5	-1	FAC+	3-5' (4')	N/A												14,000	80,000.00	0.50	1.81%	2.09%	
																	<b>Monocot Subtotals</b>		<b>19.50</b>			<b>70.77%</b>	<b>50.66%</b>	

### Flowers & Other Broadleaves (Dicots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT	COLOR	BLOOM TIME												SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
						Min-Max (ft. local)		A	M	J	J	A	S	O	by Weight	by Seed Count								
ALLCR	<i>Allium vineosum</i>	WOODING WILD ONION	7	-1	[FAC-]	1-2' (1.5')	Pink												7,600	3,000.00	0.19	0.68%	0.41%	
AMOCAN	<i>Amorpha canescens</i>	LEAD PLANT	2	-5	UPL	1-3.5' (3')	Purple												16,000	1,000.00	0.06	0.23%	0.29%	
ASCTUB	<i>Aster tuberosus</i>	BUTTERFLY WEEED	7	5	UPL	1-3.5' (2.5')	Orange												4,400	6,000.00	0.50	1.81%	0.62%	
ASTAZU	<i>Aster azureus</i>	SIX-BLUE ASTER	6	5	UPL	2-5' (3')	Blue												80,000	1,000.00	0.06	0.23%	1.45%	
ASTERI	<i>Aster ericoides</i>	HEATH ASTER	5	4	FACU-	1-3' (2')	White												200,000	0.2500	0.02	0.06%	0.91%	
ASTLAE	<i>Aster laevis</i>	SMOOTH BLUE ASTER	3	5	UPL	2.5-5' (4')	Blue												55,000	1,000.00	0.06	0.23%	1.00%	
ASTCAN	<i>Astragalus canadensis</i>	CANADIAN MILK VETCH	10	5	[UPL]	2-4' (3')	Cream												17,000	1,000.00	0.06	0.23%	0.31%	
BAPLEA	<i>Baptisia leucantha</i>	WHITE WILD INDIGO	6	2	FACU+	2-5' (4')	White												1,700	4,000.00	0.25	0.91%	0.12%	
CASFA	<i>Cassia fasciculata</i>	PARTRIDGE PEA	5	4	FACU-	1-3' (2')	Yellow												2,700	16,000.00	1.00	3.69%	0.78%	
CORPAL	<i>Coreopsis palmata</i>	PAIRIE COREOPSIS	6	5	UPL	1-2.5' (2')	Yellow												10,000	4,000.00	0.25	0.91%	0.78%	
DESILS	<i>Desmanthus illinoensis</i>	ILLINOIS SENSITIVE PLANT	3	5	UPL	2-5' (4')	Yellow												4,200	1,900.00	0.09	0.36%	0.11%	
DESCAA	<i>Desmodium canadense</i>	SHOWY TIC TREFOIL	4	-1	FAC-	3-6' (5')	Purple												5,500	1,000.00	0.06	0.23%	0.10%	
ECHPAL	<i>Echinacea pallida</i>	PALE PURPLE CONEFLOWER	6	5	UPL	2-4' (3')	Pink												5,200	6,000.00	0.50	1.81%	0.78%	
ECHPUR	<i>Echinacea purpurea</i>	PURPLE CONEFLOWER	3	5	UPL	2-5' (4')	Purple												6,600	16,000.00	1.00	3.69%	1.92%	
ERYTUC	<i>Erythrum yuccifolium</i>	RATTLESNAKE MASTER	9	-1	FAC+	2-5' (4')	White												7,500	6,000.00	0.38	1.36%	0.62%	
EUPCOR	<i>Euphorbia corollata</i>	FLOWERING SPURGE	2	5	UPL	1-4' (3')	White												6,000	1,000.00	0.06	0.23%	0.19%	
HELHEL	<i>Helopsis helianthoides</i>	FALSE SUNFLOWER	5	5	UPL	3-6' (5')	Yellow												6,300	4,000.00	0.25	0.91%	0.48%	
LESCAP	<i>Lepidota capitata</i>	ROUND-HEADED BUSH CLOVER	4	3	FACU	2-4' (3')	Green												8,000	2,000.00	0.13	0.45%	0.29%	
LIASP	<i>Liatis aspera</i>	ROUGH BLAZING STAR	6	5	UPL	2.5-5' (3')	Purple												16,000	4,000.00	0.25	0.91%	1.16%	
MONFIS	<i>Monarda fistulosa</i>	WILD BERGAMOT	4	-3	FACU	3-5' (4')	Purple												70,000	1,000.00	0.06	0.23%	1.27%	
PARINT	<i>Parthenium integrifolium</i>	WILD CLIMBIE	6	5	UPL	3-5' (4')	White												7,000	2,000.00	0.13	0.45%	0.25%	
PENDIG	<i>Penstemon digitalis</i>	FOXGLOVE BEARD TONGUE	4	-1	FAC-	2.5-5' (3.5')	White												130,000	30,000.00	0.19	0.68%	7.08%	
PETPUR	<i>Petalostemum purpureum</i>	PURPLE PRAIRIE CLOVER	3	5	UPL	1.5-3' (2')	Purple												15,000	6,000.00	0.38	1.36%	1.63%	
PHLPIP	<i>Phlox pilosa</i>	SAND PRAIRIE PHLOX	7	-1	FAC-	1-3' (2')	Pink												19,000	9,500.00	0.08	0.31%	0.17%	
POTARU	<i>Psoralea arguta</i>	PRAIRIE CINQUEFOIL	3	4	FACU-	1-3' (2')	Yellow												230,000	0.1250	0.01	0.03%	0.52%	
PYCTEN	<i>Pycnanthemum tenuifolium</i>	SLENDER MOUNTAIN MINT	7	0	FAC-	1-3' (2')	White												220,000	0.2500	0.02	0.06%	1.00%	
RATPIN	<i>Ratibida pinnata</i>	YELLOW CONEFLOWER	4	5	UPL	3-6' (5')	Yellow												30,000	2,500.00	0.16	0.57%	1.36%	
RUDHEI	<i>Rudbeckia hirta</i>	BLACK-EYED SUSAN	1	3	FACU	3-3' (2.5')	Yellow												32,000	6,000.00	0.50	1.81%	13.36%	
RUDSPE	<i>Rudbeckia speciosa tricolor</i>	SHOWY BLACK-EYED SUSAN	6	-3	[FACW]	2-4' (3')	Yellow												27,100	10,000.00	0.63	2.27%	4.92%	
RUDSUB	<i>Rudbeckia subtomentosa</i>	SWEET BLACK-EYED SUSAN	5	-2	FACU+	3-6' (5')	Yellow												43,000	1,000.00	0.06	0.23%	0.78%	
SOLILN	<i>Solidago linearis</i>	EARLY GOLDENROD	5	5	UPL	2-4' (3')	Yellow												290,000	0.7500	0.02	0.06%	1.32%	
SOLRIG	<i>Solidago rigida</i>	STIFF GOLDENROD	4	4	FACU-	3-6' (4')	Yellow												41,000	5,500.00	0.09	0.31%	0.37%	
TRACH	<i>Tridactylon ohioense</i>	COMMON SPIDERWORT	2	-2	FACU+	2-4' (3')	Blue												6,000	3,000.00	0.19	0.68%	0.44%	
VERSTR	<i>Verbena stricta</i>	HOARY VERVAIN	4	5	UPL	1-3' (2')	Blue												28,000	3,000.00	0.19	0.68%	1.53%	
ZIZALR	<i>Zizia aurea</i>	GOLDEN ALEXANDERS	7	-1	FAC+	2-4' (3')	Yellow												11,000	5,000.00	0.31	1.13%	1.00%	
																	<b>Dicot Subtotals</b>		<b>8.05</b>			<b>29.23%</b>	<b>49.00%</b>	
																	<b>BASE MIX TOTALS</b>		<b>27.55</b>			<b>100.00%</b>	<b>100.00%</b>	

### Recommended Plug Species to Supplement Low Profile Prairie Seed Mix

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT	COLOR	BLOOM TIME												PLUGS/FLAT	FLATS/ACRE	PLUGS/ACRE	PLUGS/SF	% OF MIX
						Min-Max (ft. local)		A	M	J	J	A	S	O	by Seed Count									
ANECAN	<i>Anemone canadensis</i>	MEADOW ANEMONE (1, 3)	4	-3	FACW	1-2' (1.5')	White												38	4.80	1,694.00	0.04	0.09%	
ASCVBR	<i>Asclepias verticillata</i>	WHORLED MILKWEED (2, 3)	1	5	UPL	1-2' (1.5')	White												38	20.0	760.00	0.02	0.01%	
BAPLEO	<i>Baptisia leucophylla</i>	CREAM WILD INDIGO (1, 2, 3)	10	5	UPL	1-3' (2')	Cream												38	20.0	760.00	0.02	0.01%	
CEAAME	<i>Ceanothus americanus</i>	NEW JERSEY TEA (1, 3)	6	5	UPL	1-3' (2')	Blue												38	15.0	570.00	0.01	0.01%	
DODMEA	<i>Dodecatheon meadia</i>	SHOOTING STAR (1, 2)	6	3	FACU	1-2' (1.5')	Pink												38	86.0	3,268.00	0.08	0.06%	
GENANO	<i>Gentiana andrewsii</i>	BOTTLE GENTIAN (1, 2, 4)	6	-3	FACW	1-3' (2')	Blue												38	20.0	760.00	0.02	0.01%	
GENFLA	<i>Gentiana fluviala</i>	YELLOWISH GENTIAN (1, 4)	9	3	FACU	2-4' (3')	Cream												38	15.0	570.00	0.01	0.01%	
GENPUB	<i>Gentiana puberulenta</i>	PRAIRIE GENTIAN (1, 2, 4, 5)	10	5	UPL	6-2' (1')	Blue												38	15.0	570.00	0.01	0.01%	
GEUTRI	<i>Geum triflorum</i>	PRAIRIE SMOKE (1, 2)	10	5	[UPL]	6-12' (8')	Pink												38	86.0	3,268.00	0.08	0.06%	
HEURIC	<i>Heuchera richardsonii</i>	PRAIRIE ALLUM ROOT (1, 2)	8	-1	FAC-	1-3' (2')	Green												38	20.0	760.00	0.02	0.01%	
LIAPYC	<i>Liatis pycnostachya</i>	PRAIRIE BLAZING STAR (1, 2)	6	5	FACU	1-2' (1.5')	Magenta												38	86.0	3,268.00	0.08	0.06%	
PENPAL	<i>Penstemon pallidus</i>	PALE BEARD TONGUE (5)	6	5	UPL	1-2' (1')	Cream												38	20.0	760.00	0.02	0.01%	
RCSBLA	<i>Rosa blanda</i>	EARLY WILD ROSE (1, 3)	5	3	FACU	3-6' (5')	Pink												1	15.0	15.00	0.00	0.00%	
RSCCAR	<i>Rosa carolina</i>	PASTURE ROSE (1, 3)	5	4	FACU-	1-3' (2')	Pink												1	25.0	25.00	0.00	0.00%	
RUEHLI	<i>Ruellia hirsuta</i>	HAIRY RUELLIA (3)	7	4	FACU-	6-12' (8')	Purple												38	20.0	760.00	0.02	0.01%	
SISALB	<i>Sisyrinchium albidum</i>	COMMON BLUE-EYED GRASS (2)	7	3	FACU	4-8' (6')	Blue												38	43.0	1,634.00	0.04	0.03%	
SPOHET	<i>Sporobolus heteropus</i>	PRAIRIE DROPSEED (1, 2)	10	4	FACU-	1																		

# APPENDIX A - NATIVE SEED AND PLANT MIXES

## Dry Bottom Detention Basin Seed Mix

### MIX STATISTICS

#### Base Mix Without Supplemental Plugs

Average Mix Height	3.83'	<b>Mix Description:</b> Pizzo's Dry Bottom Detention Basin Mix is designed for sunny areas that flood periodically for short periods of time ranging from 24-48 hours, but remain mesic-dry for most of the growing season. It is composed of species that tolerate fluctuating water levels & poor water quality, and is ideal for planting in the bottom of dry-bottom detention basins, within the "Bounce Zone" on detention basin slopes, dry-bottom bioswales, large rain gardens and within open floodplains. This is a medium height prairie with over 60% of seeds typically averaging 3.0' high or less at maturity and almost 15% of seeds typically averaging 5.0' high or more. While this mix does provide flowering species from April-October, it is designed to be a bit grass heavy (particularly long-term) with almost 65% of seeds being grass & sedge species. Pizzo designed the mix in this fashion to ensure excellent erosion control when used in stormwater applications. This mix can be supplemented with the recommended plug list provided below to add diversity, color, and resilience to the long-term health of your naturalized basin.
Median Mix Height	4.00'	
Mix Height Mode (# of Occurrences in Mix)	3.0' (11), 4.0' (10), 5.0' (7), 2.0' (3), 3.5' (2), 6.0' (2), 7.0' (2), 1.0' (2), 1.5' (1), 2.5' (1), 8' (0)	
Number of Native Species in Mix	42	
Lbs/Acre of Native Seed	25,78	
Protegules per Square Foot	269.01	
Native FQI	3.13	
Native Mean C Value	4.8	
Native Mean W Value	-0.8	
National Wetland Category	Facultative (+) - Equally likely to occur in wetlands or uplands (estimated 34% - 66% probability). The "+" sign denotes that this mix generally has a greater estimated probability of occurring in wetlands than the "Facultative" general indicator, but a lesser estimated probability of occurring in wetlands than a mix having the "Facultative Wetland" general indicator.	

### Grasses, Sedges, & Rushes (Monocots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME											SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S	O	by Weight	by Seed Count							
ANDGR	<i>Andropogon gerardii</i>	BIG BLUESTEM GRASS	5	1	FAC-	6-8' (7')	N/A										10,000	64,000.00	4.00	15.52%	5.46%		
ANDSDO	<i>Andropogon scoparius</i>	LITTLE BLUESTEM GRASS	5	4	FACU-	2-3' (3')	N/A										15,000	64,000.00	4.00	15.52%	8.19%		
CKBBEB	<i>Carex bebbii</i>	BEBB'S OVAL SEDGE	6	-5	OBL	2-4' (3')	N/A										34,000	3,000.00	0.19	0.73%	0.87%		
CKBBREV	<i>Carex bebbii</i>	PLAIN OVAL SEDGE	4	3	[FACU]	5"-18" (12")	N/A										29,000	4,000.00	0.25	0.97%	0.99%		
CKHYST	<i>Carex hystericus</i>	PORQUINE SEDGE	5	-5	OBL	2-4' (3')	N/A										30,000	3,000.00	0.19	0.73%	0.77%		
CKMULP	<i>Carex vulpina</i>	BROWN FOX SEDGE	2	-5	OBL	2-4' (3')	N/A										100,000	6,000.00	0.38	1.45%	5.12%		
ELEACJ	<i>Eleocharis acicularis</i>	NEEDLE SPIKE RUSH	2	-5	OBL	6-12" (8")	N/A										70,000	1,000.00	0.06	0.24%	0.60%		
ELEERY	<i>Eleocharis erythropoda</i>	RED-ROOTED SPINE RUSH	2	-5	OBL	2-4' (3')	N/A										70,000	2,000.00	0.13	0.48%	1.33%		
ELYCAN	<i>Elymus canadensis</i>	CANADA WILD RYE	4	1	FAC-	3-5' (3.5')	N/A										5,200	32,000.00	2.00	7.76%	1.42%		
ELYVR	<i>Elymus virginicus</i>	VIRGINIA WILD RYE	4	-2	FACW-	3-5' (4')	N/A										4,200	24,000.00	1.50	5.82%	0.86%		
JUNDUD	<i>Juncus dudleyi</i>	DUDLEY'S RUSH	4	0	[FAC]	1-3' (2')	N/A										3,200,000	1,000.00	0.06	0.24%	27.31%		
PANVAR	<i>Panicum virgatum</i>	SWITCH GRASS	5	-1	FAC+	3-5' (4')	N/A										14,000	80,000.00	5.00	19.85%	9.56%		
SORWUT	<i>Sorghastrum nutans</i>	INDIAN GRASS	5	2	FACU+	3-7' (6')	N/A										12,000	16,000.00	1.00	3.88%	1.64%		
<b>Monocot Subtotals</b>																			<b>10.75</b>	<b>72.73%</b>	<b>64.12%</b>		

### Flowers & Other Broadleaves (Dicots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME											SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S	O	by Weight	by Seed Count							
ALLCER	<i>Allium cernuum</i>	NODDING WILD ONION	7	1	[FAC-]	1-2' (1.5')	Pink										7,600	4,000.00	0.25	0.97%	0.26%		
ASONC	<i>Asclepias incarnata</i>	SWAMP MILKWEED	4	-5	OBL	3-5' (4')	Magenta										4,800	6,000.00	0.38	1.45%	0.25%		
ASTAZU	<i>Aster azureus</i>	SKY-BLUE ASTER	8	5	UPL	2-5' (3')	Blue										80,000	1,000.00	0.09	0.36%	0.68%		
ASTNOV	<i>Aster novae-angliae</i>	NEW ENGLAND ASTER	4	-3	FACW	4-6' (5')	Purple										65,000	1,500.00	0.09	0.36%	0.93%		
CASFAS	<i>Cassia fasciculata</i>	PARTRIDGE PEA	5	4	FACU-	1-3' (2')	Yellow										2,700	16,000.00	1.00	3.88%	0.37%		
CORTIP	<i>Carex tripteris</i>	TALL CAREX	5	0	FAC	5-8' (7')	Yellow										14,000	2,000.00	0.13	0.48%	0.24%		
DESCAA	<i>Desmodium canadense</i>	SHOWY TIOX TREFLOIL	4	1	FAC-	3-6' (5')	Purple										5,500	2,000.00	0.13	0.48%	0.09%		
ECHPUR	<i>Echinacea purpurea</i>	PURPLE CONEFLOWER	3	5	UPL	2-5' (4')	Purple										6,600	16,000.00	1.00	3.88%	0.90%		
ERYVUC	<i>Eryngium yuccifolium</i>	RATTLESNAKE MASTER	9	-1	FAC+	2-5' (4')	White										7,500	4,000.00	0.25	0.97%	0.26%		
EUPMAM	<i>Eupatorium maculatum</i>	SPOTTED JOE PYE WEED	4	-5	OBL	4-7' (5')	Pink										95,000	2,000.00	0.13	0.48%	1.62%		
EUPPER	<i>Eupatorium perfoliatum</i>	COMMON BONESET	4	-4	FACW+	3-6' (4')	White										160,000	1,000.00	0.06	0.24%	1.37%		
GALBOR	<i>Galium boreale</i>	NORTHERN BEDSTRAW	7	0	FAC	1.5-3' (2')	White										70,000	1,500.00	0.09	0.36%	0.90%		
HELAUT	<i>Helianthus autumnalis</i>	SNEEZEWEED	5	-4	FACW+	2-5' (4')	Yellow										130,000	2,000.00	0.13	0.48%	2.22%		
MONFIS	<i>Monarda fistulosa</i>	WILD BERGAMOT	4	3	FACU	3-5' (4')	Purple										70,000	4,000.00	0.25	0.97%	2.39%		
PENDIG	<i>Pentstemon digitalis</i>	FOXGLOVE BEARD TONGUE	4	1	FAC-	2.5-5' (3.5')	White										130,000	4,000.00	0.25	0.97%	4.44%		
PHYVIV	<i>Physostegia virginiana</i>	OBEDIENT PLANT	6	-5	[OBL]	3-5' (4')	Purple										11,000	8,000.00	0.30	1.14%	0.75%		
PYOMR	<i>Pycnanthemum virginianum</i>	COMMON MOUNTAIN MINT	5	-4	FACW+	1-4' (3')	White										220,000	1,000.00	0.06	0.24%	1.88%		
RUDHIR	<i>Rudbeckia hirta</i>	BLACK-EYED SUSAN	1	3	FACU	2-3' (2.5')	Yellow										92,000	8,000.00	0.30	1.14%	6.28%		
RUDSBS	<i>Rudbeckia speciosa sultanii</i>	SHOWY BLACK-EYED SUSAN	8	-3	[FACW]	2-4' (3')	Yellow										27,100	2,000.00	0.13	0.48%	0.46%		
RUDSUB	<i>Rudbeckia subtomentosa</i>	SWEET BLACK-EYED SUSAN	9	2	FACU+	3-6' (5')	Yellow										43,000	4,000.00	0.25	0.97%	1.47%		
RUDTRI	<i>Rudbeckia triloba</i>	BROWN-EYED SUSAN	3	1	FAC-	4-6' (5')	Yellow										34,000	2,000.00	0.13	0.48%	0.58%		
SILLAC	<i>Silphium laciniatum</i>	COMPASS PLANT	5	5	UPL	6-9' (8')	Yellow										660	1,000.00	0.06	0.24%	0.01%		
SOLGRG	<i>Solidago graminifolia</i>	COMMON GRASS-LEAVED GOLDENROD	4	-2	FACW-	2-4' (3')	Yellow										350,000	1,000.00	0.06	0.24%	2.95%		
SOLRID	<i>Solidago rigidula</i>	RIDGELL'S GOLDENROD	7	-5	OBL	2-4' (3')	Yellow										93,000	1,000.00	0.06	0.24%	0.78%		
SOLRIG	<i>Solidago rigida</i>	STIFF GOLDENROD	4	4	FACU-	3-6' (4')	Yellow										41,000	1,500.00	0.09	0.36%	0.52%		
THADAD	<i>Thalictrum dasycarpum</i>	PURPLE MEADOW RUE	5	-2	FACW-	4-7' (6')	Cream										11,000	2,000.00	0.13	0.48%	0.19%		
VERHAS	<i>Verbena hastata</i>	BLUE VERVAIN	4	-4	FACW+	4-7' (5')	Blue										93,000	2,000.00	0.13	0.48%	1.59%		
VERFAS	<i>Vernonia fasciculata</i>	COMMON IRONWEED	5	-3	FACW	4-6' (5')	Purple										24,000	4,000.00	0.25	0.97%	0.92%		
YOZAU	<i>Zizia aurea</i>	GOLDEN ALEXANDERS	7	-1	FAC+	2-4' (3')	Yellow										11,000	8,000.00	0.30	1.14%	0.75%		
<b>Dicot Subtotals</b>																			<b>7.03</b>	<b>27.27%</b>	<b>35.88%</b>		
<b>BASE MIX TOTALS</b>																			<b>25.78</b>	<b>100.00%</b>	<b>100.00%</b>		

### Recommended Plug Species to Supplement Dry Bottom Detention Basin Seed Mix

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME											PLUGS/FLAT	PLUGS/ACRE	PLUGS/ACRE	PLUGS/SF	% OF MIX by Seed Count
								A	M	J	J	A	S	O									
FILRUB	<i>Ripariania rubra</i>	QUEEN OF THE PRAIRIE (1, 2, 5)	10	-5	[OBL]	4-6' (5')	Pink										38	43.0	1,634.00	0.04	0.01%		
GENAND	<i>Gentiana andrewsii</i>	BOTTLE GENTIAN (1, 2, 4)	8	-3	FACW	1-3' (2')	Blue										38	20.0	760.00	0.02	0.01%		
HEURIC	<i>Heuchera richardsonii</i>	PRAIRIE ALUM ROOT (1, 2)	8	1	FAC-	1-3' (2')	Green										38	20.0	760.00	0.02	0.01%		
LIAPYC	<i>Liatris pycnostachya</i>	PRAIRIE BLAGING STAR (1, 2)	8	1	FAC-	1-2' (1.6')	Magenta										38	86.0	3,268.00	0.08	0.03%		
LIASPI	<i>Liatris spicata</i>	MARSH BLAGING STAR (1, 2)	8	0	FAC	3-5' (4')	Purple										38	86.0	3,268.00	0.08	0.03%		
ROSSET	<i>Rosa setigera</i>	ILLINOIS ROSE (1, 2, 3, 5)	7	2	FACU+	5-12' (6')	Pink										1	26.0	20.00	0.00	0.00%		
VERVAR	<i>Vernacistrum virginicum</i>	CULVER'S ROOT (1)	7	0	FAC	2-5' (3')	White										38	86.0	3,268.00	0.08	0.03%		
<b>Subtotal</b>																			<b>361.0</b>	<b>12,978.00</b>	<b>0.30</b>	<b>0.11%</b>	

### SUPPLEMENTED MIX STATISTICS

#### Base Seed Mix Including Supplemental Plugs

Number of Native Species in Mix	49	Some species are not appropriate for inclusion into a seed mix, however they may be very desirable to have as part of the permanent plant matrix because of their ecological, habitat, and/or aesthetic value. The plug species listed above are appropriate for supplementing this seed mix. Following are the common reasons for not including these species within the seed mix: 1-Does not germinate well from seed in the field, 2-Seed is very expensive, 3-Low number of seeds per ounce, 4-Requires specialized microclimate, 5-Seed is not commercially available or is only available in small quantities
Native FQI	36.7	
Native Mean C Value	5.2	
Native Mean W Value	-0.8	
National Wetland Category	Facultative (+) - Equally likely to occur in wetlands or uplands (estimated 34% - 66%). The "+" sign denotes that this mix generally has a greater estimated probability of occurring in wetlands than the "Facultative" general indicator, but a lesser estimated probability of occurring in wetlands than a mix having the "Facultative Wetland" general indicator.	

### Notes:

- 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre
- 2.) For spring planting, Pizzo recommends installing a cover crop of Seed Oats (*Avena sativa*) with the above seed mix at 40 lbs/acre
- 3.) For fall planting, Pizzo recommends installing a cover crop of ReGreen (a Winter Wheat x Wheatgrass Sterile Hybrid) with the above mix at 50 lbs/acre
- 4.) \*\*At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop.\*\*

# APPENDIX A - NATIVE SEED AND PLANT MIXES

## Wetland Seed Mix (Saturated Soils)

MIX STATISTICS	
<b>Base Mix Without Supplemental Plugs</b>	
Average Mix Height:	3.4'
Median Mix Height:	4.0'
Mix Height Mode (# of Occurrences in Mix)	3.0' (13) 4.0' (11), 2.0' (9), 5.0' (8), 1.0' (2), 8.0' (1), 7.0' (1), 25' (1)
Number of Native Species in Mix:	46
Lbs/Acre of Native Seed:	7.90
Propagules per Square Foot:	31,721
Native PCI:	38.4
Native Mean C Value:	5.1
Native Mean W Value:	-4.2
National Wetland Category:	Facultative Wetland (+) - Usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67% - 99% probability). The "+" sign denotes that this mix generally has a greater estimated probability of occurring in wetlands than the "Facultative" general indicator, but a lesser estimated probability of occurring in wetlands than a mix having the "Facultative Wetland" general indicator.

### Grasses, Sedges, & Rushes (Monocots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT (Min-Max (Typical))	COLOR	BLOOM TIME										SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S	O	by Weight	by Seed Count						
CAJCAN	<i>Calamagrostis canadensis</i>	BLUE JOINT GRASS	3	-5	OBL	3.5' (4')	N/A										280,000	1,000	0.06	0.79%	2.03%	
COXOMO	<i>Carex torreyana</i>	BRISTLY SEDEGE	5	-5	OBL	1-3' (2')	N/A										30,000	1,000	0.05	0.79%	0.32%	
CKCRIS	<i>Carex cristata</i>	CRESTED OVAL SEDEGE	4	-4	FACW+	2-4' (3')	N/A										58,000	0,500	0.03	0.40%	0.21%	
COFRAN	<i>Carex frankii</i>	BRISTLY CATTAIL SEDEGE	6	-5	OBL	1-3' (2')	N/A										17,000	25,000	0.16	1.98%	0.31%	
CKHYST	<i>Carex hystericina</i>	POPCUPINE SEDEGE	5	-5	OBL	2-4' (3')	N/A										30,000	1,500	0.09	1.1%	0.38%	
CKLURI	<i>Carex lurida</i>	BOTTLEBRUSH SEDEGE	6	-5	OBL	2-4' (3')	N/A										12,000	3,000	0.19	2.37%	0.26%	
CKSCOP	<i>Carex scoparia</i>	LANCE-LEAFED OVAL SEDEGE	7	-3	FACW+	1-3' (2')	N/A										84,000	3,000	0.19	2.37%	1.62%	
CKSTIP	<i>Carex stipitata</i>	COMMON FOX SEDEGE	3	-3	OBL	2-4' (3')	N/A										34,000	1,000	0.05	0.79%	0.29%	
CKWJLP	<i>Carex vulpocarpa</i>	BROWN FOX SEDEGE	2	-5	OBL	2-4' (3')	N/A										100,000	2,000	0.19	1.58%	1.45%	
ELEACI	<i>Eleocharis acicularis</i>	NEEDLE SPIKE RUSH	2	-5	OBL	6"-12" (8")	N/A										70,000	0,750	0.05	0.59%	0.38%	
ELEERY	<i>Eleocharis erythropoda</i>	RED-ROOTED SPIKE RUSH	2	-5	OBL	2-4' (3')	N/A										78,000	1,000	0.06	0.79%	0.56%	
ELVIR	<i>Elymus virginicus</i>	VIRGINIA WILD RYE	4	-3	FACW+	3.5' (4')	N/A										4,200	32,000	3.00	25.31%	0.97%	
GLVSTR	<i>Glyceria striata</i>	FOWL-MANNA GRASS	4	-3	[FACW]	2-4' (3')	N/A										90,000	1,000	0.06	0.79%	0.68%	
JUNLUD	<i>Juncus ludovicianus</i>	DUDLEY'S RUSH	4	0	[FACW]	1-3' (2')	N/A										3,200,000	0,500	0.09	0.40%	11.56%	
JUNEFF	<i>Juncus effusus</i>	COMMON RUSH	7	-5	OBL	1-3' (2')	N/A										1,000,000	0,500	0.09	0.40%	3.61%	
JUNTOR	<i>Juncus torreyi</i>	TORREY'S RUSH	4	-3	FACW	6"-18" (12")	N/A										1,600,000	0,500	0.09	0.40%	5.78%	
LEEDRY	<i>Leersia oryzoides</i>	RICE CUT GRASS	4	-5	OBL	3.5' (4')	N/A										34,000	4,000	0.25	3.16%	0.88%	
SOATR	<i>Saiopsis arvensis</i>	DARK GREEN RUSH	4	-5	OBL	3-6' (5')	N/A										460,000	4,000	0.25	3.16%	13.30%	
SOICYP	<i>Saiopsis cypripetala</i>	WOOL GRASS	6	-5	OBL	3.5' (4')	N/A										1,700,000	2,000	0.19	1.58%	24.57%	
SPAPEL	<i>Spartina pedunculata</i>	PRAIRIE CORD GRASS	4	-4	FACW+	5-9' (7')	N/A										6,800	4,000	0.25	3.16%	0.19%	
<b>Monocot Subtotals</b>																	<b>4.11</b>	<b>52.00%</b>	<b>69.41%</b>			

### Flowers & Other Broadleaves (Dicots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT (Min-Max (Typical))	COLOR	BLOOM TIME										SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S	O	by Weight	by Seed Count						
AJLSUB	<i>Arisema subcordatum</i>	COMMON WATER PLANTAIN	4	-5	OBL	1-3' (2')	White										60,000	2,000	0.19	1.58%	0.87%	
ASINCV	<i>Aster novae-angliae</i>	NEW ENGLAND ASTER	4	-3	FACW+	4-6' (5')	Magenta										4,800	16,000	1.00	12.65%	0.55%	
ASTUMB	<i>Aster umbellatus</i>	FLAT-TOP ASTER	3	-3	FACW	3.5' (4')	Green										67,000	2,000	0.19	1.58%	0.97%	
BOLLAR	<i>Boltonia lobata</i>	FALSE ASTER	3	-5	[OBL]	3.5' (4')	White										16,000	0,750	0.05	0.59%	0.87%	
CASHB	<i>Cassia hebecarpa</i>	WILD SENNA	3	-3	FACW	3-6' (5')	Yellow										1,400	1,000	0.06	0.79%	0.01%	
CHHEGL	<i>Chelone glabra</i>	TURTLEHEAD	3	-5	OBL	3-6' (5')	Green										92,000	1,000	0.06	0.79%	0.66%	
EUPMAM	<i>Eupatorium maculatum</i>	SPOTTED JOE PYE WEED	4	-5	OBL	4-7' (5')	Pink										56,000	3,000	0.19	2.37%	2.06%	
EUPPER	<i>Eupatorium perfoliatum</i>	COMMON BONESET	4	-4	FACW+	3-6' (4')	White										150,000	1,000	0.06	0.79%	1.16%	
HELALT	<i>Helianthus autumnalis</i>	SNEEZEWEED	5	-4	FACW+	2-5' (4')	Yellow										130,000	1,000	0.06	0.79%	0.94%	
HIBLAE	<i>Hibiscus laevis</i>	HALBERD-LEAVED ROSE MALLOW	6	-5	OBL	3-6' (5')	Pink										2,800	2,000	0.19	1.58%	0.04%	
IMPICAP	<i>Impatiens capensis</i>	ORANGE JEWELWEED	3	-3	FACW	2-5' (4')	Orange										4,000	1,000	0.06	0.79%	0.03%	
IRIVIS	<i>Iris versicolor</i>	BLUE FLAG	5	-5	OBL	2-4' (3')	Blue										1,000	16,000	1.00	12.65%	0.12%	
LOBELI	<i>Lobelia siphilitica</i>	GREAT BLUE LOBELIA	6	-4	FACW+	2-4' (3')	Blue										500,000	0,500	0.09	0.40%	1.61%	
LVCAME	<i>Lycochilus americanus</i>	COMMON WATER HOREHOUND	5	-5	OBL	1-3' (2')	White										130,000	0,750	0.05	0.59%	0.70%	
LITALA	<i>Lythrum alatum</i>	WINGED LOOSESTRIFE	7	-5	OBL	2-4' (3')	Purple										3,000,000	0,025	0.00	0.05%	1.36%	
MENARV	<i>Mentha arvensis villosa</i>	WILD MINT	5	-5	[OBL]	1-3' (2')	White										300,000	0.125	0.01	0.10%	0.27%	
MIMRIN	<i>Mimulus ringens</i>	MONKEY FLOWER	6	-5	OBL	2-4' (2.5')	Purple										2,300,000	0,500	0.09	0.40%	8.31%	
PERGED	<i>Perithaema sedifolium</i>	DITCH STONECROP	5	-5	OBL	1-3' (2')	Green										1,300,000	0,500	0.09	0.40%	4.70%	
PHYVIV	<i>Phytolacca virginiana</i>	OBEDIENT PLANT	6	-5	[OBL]	3.5' (4')	Purple										11,000	2,000	0.19	1.58%	0.16%	
SAGLAT	<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	4	-5	OBL	2-4' (3')	White										61,000	2,000	0.19	1.58%	0.68%	
SILPER	<i>Silphium perfoliatum</i>	CUP PLANT	5	-2	FACW+	5-10' (8')	Yellow										1,400	0,500	0.03	0.40%	0.01%	
SOUGRG	<i>Solidago graminifolia</i>	COMMON GRASS-LEAVED GOLDENROD	4	-2	FACW+	2-4' (3')	Yellow										350,000	0,500	0.09	0.40%	1.26%	
SOLRID	<i>Solidago rigida</i>	RIDGEL'S GOLDENROD	7	-5	OBL	2-4' (3')	Yellow										99,000	1,000	0.06	0.79%	0.67%	
VERHAS	<i>Verbena hastata</i>	BLUE VERVAIN	4	-4	FACW+	4-7' (5')	Blue										99,000	1,000	0.06	0.79%	0.67%	
VERFAS	<i>Vernonia fasciculata</i>	COMMON IRONWEED	5	-3	FACW+	4-6' (5')	Purple										24,000	2,000	0.19	1.58%	0.35%	
<b>Dicot Subtotals</b>																	<b>3.79</b>	<b>48.00%</b>	<b>30.59%</b>			
<b>BASE MIX TOTALS</b>																	<b>7.90</b>	<b>100.00%</b>	<b>100.00%</b>			

### Recommended Plug Species to Supplement Wetland Seed Mix

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT (Min-Max (Typical))	COLOR	BLOOM TIME										PLUGS/PLANT	PLUGS/ACRE	PLUGS/ACRE	PLUGS/SF	% OF MIX by Seed Count
								A	M	J	J	A	S	O								
CKLURN	<i>Carex lupulina</i>	COMMON HOP SEDEGE (2, 3)	7	-5	OBL	2-4' (3')	N/A										38	200	760.00	0.02	0.01%	
CKSTRI	<i>Carex stricta</i>	COMMON TUSsock SEDEGE (2, 3)	5	-5	OBL	2-4' (3')	N/A										38	200	760.00	0.02	0.01%	
CASHB	<i>Cassia hebecarpa</i>	WILD SENNA (2, 3)	3	-3	FACW	3-6' (5')	Yellow										38	15.0	570.00	0.01	0.00%	
FILRUB	<i>Filipendula rubra</i>	QUEEN OF THE PRAIRIE (1, 2, 5)	10	-5	[OBL]	4-6' (5')	Pink										38	200	760.00	0.02	0.01%	
GENAND	<i>Gentiana andrewsii</i>	BOTTLE GENTIAN (1, 2, 4)	3	-3	FACW	1-3' (2')	Blue										38	15.0	570.00	0.01	0.00%	
LIASPI	<i>Liatis spicata</i>	MARSH BLAZING STAR (1, 2)	6	0	FAC	3.5' (4')	Purple										38	200	760.00	0.02	0.01%	
LOBCAR	<i>Lobelia cardinalis</i>	CARDINAL FLOWER (2, 3, 4)	7	-5	OBL	3.5' (4')	Red										38	360.0	3,268.00	0.08	0.02%	
ONJOSEN	<i>Oncoclea sensibilis</i>	SENSITIVE FERN (5)	8	-3	FACW	1-2' (1.5')	N/A										1	250.0	250.00	0.01	0.00%	
PEFLAN	<i>Podocarpus lanceolata</i>	FERN BETONY (1, 2, 5)	3	-5	[OBL]	2-4' (3')	Yellow										38	15.0	570.00	0.01	0.00%	
PEFLAN	<i>Pectanthera virginica</i>	ARROW ARUM (2, 3)	10	-5	OBL	2.5' (4')	Green										38	360.0	3,268.00	0.08	0.02%	
SPAGLUR	<i>Spartanium eurycarpum</i>	COMMON BLUE REED (1)	6	-5	OBL	3.5' (4')	White										38	360.0	3,268.00	0.08	0.02%	
SPIALB	<i>Spiraea alba</i>	MEADOWSWEET (1, 5)	7	-4	FACW+	3.5' (4')	White										1	25.0	250.00	0.01	0.00%	
<b>Subtotals</b>																	<b>61.80</b>	<b>13,309.00</b>	<b>0.31</b>	<b>0.10%</b>		

### SUPPLEMENTED MIX STATISTICS

Base Seed Mix Including Supplemental Plugs	
Number of Native Species in Mix:	57
Native PCI:	41.3
Native Mean C Value:	5.5
Native Mean W Value:	-4.2
National Wetland Category:	Facultative Wetland (+) - Usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67% - 99%). The "+" sign denotes that this mix generally has a greater estimated probability of occurring in wetlands than the "Facultative" general indicator, but a lesser estimated probability of occurring in wetlands than a mix having the "Facultative Wetland" general indicator.

- Notes:**
- 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre
  - 2.) For spring planting, Pizzo recommends installing a cover crop of Seed Oats (*Avena sativa*) with the above seed mix at 40 lbs/acre
  - 3.) For fall planting, Pizzo recommends installing a cover crop of ReGreen (a Winter Wheat x Wheatgrass Sterile Hybrid) with the above mix at 50 lbs/acre
  - 4.) \*\*At no time should Annual or Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop.\*\*



# APPENDIX A - NATIVE SEED AND PLANT MIXES

## Emergent Seed Mix (2-6" Water Depth)

MIX STATISTICS	
<b>Base Mix Without Supplemental Plugs</b>	
Average Mix Height	3.22'
Medium Mix Height	3.00'
Mix Height Mode (# of Occurrences in Mix)	3.0' (12), 2.0' (6), 4.0' (4), 5.0' (3), 5.5' (1), 2.5' (1)
Number of Native Species in Mix	27
Lbs/Acre of Native Seed	6.36
Propagules per Square Foot	228.92
Native PFI	-28.5
Native Mean C Value	-5.5
Native Mean W Value	-5.0
National Wetland Category	Obligate Wetland - Occurs almost always in wetlands under natural conditions (estimated >99% probability)

**Mix Description:** Pizzo's Emergent Seed Mix is designed to grow in shallow water 2" to 6" deep. It is ideal for shallow water wetlands and within the emergent zone of a pond or stream shoreline. Over 73% of the seeds in this mix are Sedge or Sedge-like species. To complement this dark green aesthetic over 26% of the mix composed of wildflowers, which provide an array of blooms from May through October. This emergent mix will result in a medium-tall profile with under 44% of seeds typically averaging 3.0' high or less and over 20% of seeds typically averaging 5.0' high or more at maturity. To achieve appropriate seed-to-soil contact for germination this mix must be planted prior to establishing normal water levels, or the water body must be drained in order to expose the soil within the targeted seeding area prior to seeding. We recommend installing appropriate temporary erosion control blanket over areas seeded with this mix. The Emergent seed mix can be supplemented with the recommended plug list provided below to add diversity, color, and resilience to the long-term health of your wetland.

### Grasses, Sedges, & Rushes (Monocots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C Value	W Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
CRCOMO	<i>Carex comosa</i>	BRISTLY SEDGE	5	-5	OBL	1-3' (2')	N/A							30,000	6,000	0.38	5.90%	1.80%
CXHYST	<i>Carex hystericina</i>	PORCUPINE SEDGE	5	-5	OBL	2-4' (3')	N/A							30,000	2,000	0.13	1.97%	0.60%
CXLAQU	<i>Carex laevis</i>	COMMON LAKE SEDGE	5	-5	OBL	2-4' (3')	N/A							11,000	25,000	0.16	2.46%	0.28%
CXLRUR	<i>Carex lurida</i>	BOTTLEBRUSH SEDGE	8	-5	OBL	2-4' (3')	N/A							12,000	2,000	0.13	1.97%	0.24%
CXSTR1	<i>Carex stricta</i>	COMMON TUSsock SEDGE	5	-5	OBL	2-4' (3')	N/A							53,000	1,000	0.06	0.98%	0.53%
CXVULP	<i>Carex vulpinoidea</i>	BROWN FOX SEDGE	2	-5	OBL	2-4' (3')	N/A							100,000	4,000	0.25	3.93%	4.00%
ELEERY	<i>Eleocharis erythropoda</i>	RED-ROOTED SPIKE RUSH	2	-5	OBL	2-4' (3')	N/A							78,000	1,000	0.06	0.98%	0.78%
JUNEFF	<i>Juncus effusus</i>	COMMON RUSH	7	-5	OBL	1-3' (2')	N/A							1,000,000	1,000	0.06	0.98%	10.00%
LEEORY	<i>Leersia oryzoides</i>	RICE CUT GRASS	4	-5	OBL	3-5' (4')	N/A							34,000	6,000	0.38	5.90%	2.04%
SGATR	<i>Scirpus atrovirens</i>	DARK GREEN RUSH	4	-5	OBL	3-6' (5')	N/A							460,000	4,000	0.25	3.93%	18.40%
SGCYP	<i>Scirpus cyperinus</i>	WOOD GRASS	6	-5	OBL	3-5' (4')	N/A							1,700,000	2,000	0.13	1.97%	34.01%
SGVAC	<i>Scirpus validus creber</i>	GREAT BULRUSH	5	-5	OBL	4-7' (5.5')	N/A							31,000	40,000	0.25	3.93%	1.24%
<b>Monocot Subtotals</b>															<b>2.22</b>	<b>34.89%</b>	<b>73.92%</b>	

### Flowers & Other Broadleaves (Dicots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C Value	W Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						SEEDS/OZ	OZ/ACRE	LBS/ACRE	% OF MIX	
								A	M	J	J	A	S				O	by Weight
ACOCAL	<i>Aconitum columbianum</i>	SWEET FLAG	7	-5	OBL	1-3' (2')	Green							6,900	12,000	0.75	11.73%	0.79%
ALISUB	<i>Alisma subcordatum</i>	COMMON WATER PLANTAIN	4	-5	OBL	1-3' (2')	White							60,000	4,000	0.25	3.93%	2.40%
ASQNC	<i>Asclepias incarnata</i>	SWAMP MILKWEED	4	-5	OBL	3-5' (4')	Magenta							4,800	4,000	0.25	3.93%	0.19%
BIDCER	<i>Bidens cernua</i>	NODDING BUR MARI GOLD	5	-5	OBL	2-4' (3')	Yellow							21,000	4,000	0.25	3.93%	0.84%
BIDCOR	<i>Bidens coronata</i>	TALL SWAMP MARI GOLD	3	-5	OBL	3-5' (4')	Yellow							6,500	20,000	0.13	1.97%	0.13%
EUPMAM	<i>Eupatorium maculatum</i>	SPOTTED JOE PYE WEED	4	-5	OBL	4-7' (5')	Pink							95,000	0,750	0.05	0.74%	0.71%
HIBLAE	<i>Hibiscus laevis</i>	HALBERD-LEAVED ROSE MALLOW	6	-5	OBL	3-6' (5')	Pink							2,800	35,000	0.22	3.44%	0.10%
IRIVIS	<i>Iris virginica shrevei</i>	BLUE FLAG	5	-5	OBL	2-4' (3')	Blue							1,000	14,000	0.09	1.37%	0.14%
LUDALT	<i>Ludwigia alternifolia</i>	SEEDBOX	6	-5	OBL	2-4' (3')	Yellow							1,300,000	0.125	0.01	0.12%	1.63%
LTCAME	<i>Lycopus americanus</i>	COMMON WATER HOREHOUND	5	-5	OBL	1-3' (2')	White							130,000	0,250	0.02	0.25%	0.33%
LYTALA	<i>Lythrum alatum</i>	WINGED LOOSESTRIFE	7	-5	OBL	2-4' (3')	Purple							3,000,000	0.125	0.01	0.12%	3.75%
MIMIRIN	<i>Mimulus ringens</i>	MONKEY FLOWER	6	-5	OBL	2-4' (2.5')	Purple							2,300,000	0,500	0.03	0.49%	11.50%
PONCOR	<i>Pontederia cordata</i>	PICKEREL WEED	10	-5	OBL	1-3' (2')	Purple							1,250	16,000	1.00	15.72%	0.20%
SAGLAT	<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	4	-5	OBL	2-4' (3')	White							61,000	4,000	0.25	3.93%	2.44%
SCLRID	<i>Scirpus atrovirens</i>	RIDGELL'S GOLDENROD	7	-5	OBL	2-4' (3')	Yellow							93,000	1,000	0.06	0.98%	0.93%
<b>Dicot Subtotals</b>															<b>4.14</b>	<b>65.11%</b>	<b>26.08%</b>	
<b>BASE MIX TOTALS</b>															<b>6.36</b>	<b>100.00%</b>	<b>100.00%</b>	

### Recommended Plug Species to Supplement Emergent Seed Mix

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C Value	W Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						PLUGS/FLAT	FLATS/ACRE	PLUGS/ACRE	PLUGS/SF	% OF MIX by Seed Count
								A	M	J	J	A	S					
CXEMOR	<i>Carex amara</i>	RIVERBANK SEDGE (5)	6	-5	OBL	2-4' (3')	N/A							38	430	1,634.00	0.04	0.02%
LOBCAR	<i>Lobelia cardinalis</i>	CARDINAL FLOWER (1, 2, 4)	7	-5	OBL	3-5' (4')	Red							38	430	1,634.00	0.04	0.02%
PELVIR	<i>Peltandra virginica</i>	ARROW ARUM (2, 3)	10	-5	OBL	2-5' (4')	Green							38	86.0	3,268.00	0.08	0.03%
SPEAUR	<i>Spartanum eurycarpum</i>	COMMON BUR REED (1)	6	-5	OBL	3-5' (4')	White							38	86.0	3,268.00	0.08	0.03%
<b>Dicot Subtotals</b>															<b>258.0</b>	<b>9,804.00</b>	<b>0.23</b>	<b>0.10%</b>

### SUPPLEMENTED MIX STATISTICS

Base Seed Mix Including Supplemental Plugs	
Number of Native Species in Mix	31
Native PFI	-31.6
Native Mean C Value	-5.7
Native Mean W Value	-5.0
National Wetland Category	Obligate Wetland - Occurs almost always in wetlands under natural conditions (estimated >99% probability)

Some species are not appropriate for inclusion into a seed mix, however they may be very desirable to have as part of the permanent plant matter because of their ecological, habitat, and/or aesthetic value. The plug species listed above are appropriate for supplementing this seed mix. Following are the common reasons for not including these species within the seed mix: 1-Does not germinate well from seed in the field, 2-Seed is very expensive, 3-Low number of seeds per ounce, 4-Requires specialized microclimate, 5-Seed is not commercially available or is only available in small quantities

- Notes:**
- 1.) Pizzo recommends installing a Mycorrhizal Inoculant with the above seed mix at 40 lbs/acre
  - 2.) For spring planting, Pizzo recommends installing a cover crop of Seed Oats (*Avena sativa*) with the above seed mix at 40 lbs/acre
  - 3.) For fall planting, Pizzo recommends installing a cover crop of ReGreen (a Winter Wheat x Wheatgrass Sterile Hybrid) with the above mix at 50 lbs/acre.
  - 4.) \*\*At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop\*\*



# APPENDIX A - NATIVE SEED AND PLANT MIXES

## Shoreline Plug Mix

### MIX STATISTICS

#### Base Mix Without Supplemental Plugs

Average Mix Height	3.35'
Median Mix Height	3.00'
Mix Height Mode (# of Occurrences in Mix)	3' (11), 4' (6), 5.5' (4), 2' (4), 5' (3), 1.5' (1)
Number of Native Species in Mix	26
Native FQI	30.2
Native Mean C-Value	5.9
Native Mean W-Value	-4.7

**Mix Description:** Designed for shoreline applications from normal water level (NWL) to 6" water depth.

National Wetland Category: Obligate Wetland - Occurs almost always in wetlands under natural conditions (estimated >99% probability)

### Grasses, Sedges, & Rushes (Monocots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						Unit(s)	Size	
								A	M	J	J	A	S			O
COOMO	<i>Carex comosa</i>	BRISTLY SEDGE	5	-5	OBL	1-3' (2')	N/A								each	2" potted
COEMOR	<i>Carex ornoryi</i>	RIVERBANK SEDGE	6	-5	OBL	2-4' (3')	N/A								each	2" potted
COHYST	<i>Carex hystericina</i>	PORCUPINE SEDGE	5	-5	OBL	2-4' (3')	N/A								each	2" potted
COACU	<i>Carex lacustris</i>	COMMON LAKE SEDGE	6	-5	OBL	2-4' (3')	N/A								each	2" potted
COCLUPN	<i>Carex lupulina</i>	COMMON HOP SEDGE	7	-5	OBL	2-4' (3')	N/A								each	2" potted
COLURI	<i>Carex lurida</i>	BOTTLEBRUSH SEDGE	8	-5	OBL	2-4' (3')	N/A								each	2" potted
COXTRI	<i>Carex stricta</i>	COMMON TUSsock SEDGE	5	-5	OBL	2-4' (3')	N/A								each	2" potted
COVULP	<i>Carex vulpinoidea</i>	BROWN FOX SEDGE	2	-5	OBL	2-4' (3')	N/A								each	2" potted
COATR	<i>Scirpus atrovirens</i>	DARK GREEN RUSH	4	-5	OBL	3-6' (5')	N/A								each	2" potted
COQYP	<i>Scirpus cyperinus</i>	WOOD GRASS	6	-5	OBL	3-5' (4')	S								each	2" potted
COQVAC	<i>Scirpus validus creber</i>	GREAT BULRUSH	5	-5	OBL	4-7' (5.5')	N/A								each	2" potted

### Flowers & Other Broadleaves (Dicots)

ACRONYM	SCIENTIFIC NAME	COMMON NAME	C-Value	W-Value	WETNESS	HEIGHT Min-Max (Typical)	COLOR	BLOOM TIME						Unit(s)	Size	
								A	M	J	J	A	S			O
ACCCAL	<i>Acorus calamus</i>	SWEET FLAG	7	-5	OBL	1-3' (2')	Green								each	2" potted
AUISUB	<i>Alisma subcordatum</i>	COMMON WATER PLANTAIN	4	-5	OBL	1-3' (2')	White								each	2" potted
ASQINC	<i>Asclepias incarnata</i>	SWAMP MILKWEED	4	-5	OBL	3-5' (4')	Magenta								each	2" potted
EUPMAM	<i>Eupatorium maculatum</i>	SPOTTED JOE PYE WEEED	4	-5	OBL	4-7' (5')	Pink								each	2" potted
HBLAE	<i>Hibiscus laevis</i>	HALBERD-LEAVED ROSE MALLOW	6	-5	OBL	3-6' (5')	Pink								each	2" potted
IRIVIS	<i>Iris virginica shrevei</i>	BLUE FLAG	5	-5	OBL	2-4' (3')	Blue								each	2" potted
LIASPI	<i>Liatris spicata</i>	MARSH BLAZING STAR	6	0	FAC	3-5' (4')	Purple								each	2" potted
LOBCAR	<i>Labellia cardinalis</i>	CARDINAL FLOWER	7	-5	OBL	3-5' (4')	Red								each	2" potted
LYTALA	<i>Lythrum alatum</i>	WINGED LOOSESTRIFE	7	-5	OBL	2-4' (3')	Purple								each	2" potted
ONQSEN	<i>Onoclea sensibilis</i>	SENSITIVE FERN	8	-8	FACW	1-2' (1.5')	N/A								each	2" potted
PELVIR	<i>Peltandra virginica</i>	ARROW ARUM	10	-5	OBL	2-5' (4')	Green								each	2" potted
PONCOR	<i>Pontederia cordata</i>	PICKEREL WEEED	10	-5	OBL	1-3' (2')	Purple								each	2" potted
SAGLAT	<i>Sagittaria latifolia</i>	COMMON ARROWHEAD	4	-5	OBL	2-4' (3')	White								each	2" potted
SOLRID	<i>Solidago riddelli</i>	RIDDELL'S GOLDENROD	7	-5	OBL	2-4' (3')	Yellow								each	2" potted
SPAEUR	<i>Sparganium eurycarpum</i>	COMMON BUR REED	6	-5	OBL	3-5' (4')	White								each	2" potted

### Notes:

- 1) At no time should Annual nor Perennial Rye (*Lolium multiflorum* or *perenne*) be utilized as a cover crop
- 2) At no time should Creeping Bent Grass (*Agrostis palustris*) be used as a cover crop



# LOCAL NATURAL AREA CONTRACTORS

Pizzo Group, Leland, IL  
Phone: (815) 495-2300

Encap, Inc., DeKalb, IL  
Phone: (815) 748-4500

Tallgrass Restoration  
Phone: (847) 925-9830

Applied Ecological Services, West Dundee, IL  
Phone: (847) 844-9385

Conservation Land Stewardship, LLC, Elmhurst, IL  
Phone: (630) 559-2035

Cardno JF New, Walkerton, IN  
Phone: (574) 586-3400

Natural Resources Management, Beecher, IL  
Phone: (708) 935-2100

Integrated Lakes Management, Waukegan IL  
Phone: (847) 244-6662



# NATIVE PLANT & SEED SUPPLIERS

## Native Seed

Agrecol, Inc., Evansville, WI  
Phone: (608) 223-3571

Feder's Prairie Seed Company, Blue Earth, MN  
Phone: (507) 526-3049

Ion Exchange, Harpers Ferry, IA  
Phone: (563) 535-7231

Prairie Moon Nursery, Winona, MN  
Phone: (507) 452-1362

Shooting Star Native Seeds, Spring Grove, MN  
Phone: (507) 498-3944

Spence Restoration Nursery, Muncie, IN  
Phone: (765) 286-7154

## Native Plugs

Agrecol, Inc., Evansville, WI  
Phone: (608) 223-3571

Genesis Nursery, Inc., Tampico, IL  
Phone: (877) 817-5325

J&J Transplant Aquatic Nursery, LLC, Wild Rose, WI  
Phone: (800) 622-5055

Midwest Natural Garden, St. Charles, IL  
Phone: (847) 742-1792

Spence Restoration Nursery, Muncie, IN  
Phone: (765) 286-7154

Pizzo Native Plant Nursery, LLC, Leland, IL  
Phone: (815) 495-2300

## Native Trees & Shrubs

Bailey Nurseries, Inc., St. Paul, MN  
Phone: (708) 935-5974

Forrest Keeling Nursery, Elsberry, MO  
Phone: (573) 898-5571

Kankakee Nursery Co., St. Anne, IL  
Phone: (815) 937-9358

Possibility Place Nursery, Monee, IL  
Phone: (708) 534-3988



# INVASIVE SPECIES LIST

It is the responsibility of the Natural Areas Contractor to locate, identify, and eradicate any species that may endanger the successful establishment and long-term health of the specified native plant communities within the project area/site. Following is a list of common invasive, weedy and aggressive native species typically encountered during ecological restoration efforts that can inhibit the successful establishment of desirable native species. This list is not representative of the site and should not be considered an inventory. The listed species shall at no time be allowed to dominate any portion of the project site.

## Aggressive Weed/Invasive Species List:

<i>Acer negundo</i>	BOXELDER <sup>3</sup>	<i>Elaeagnus umbellata</i>	AUTUMN OLIVE <sup>1</sup>
<i>Acer platanoides</i>	NORWAY MAPLE	<i>Elymus repens</i>	QUACKGRASS
<i>Achillea</i> spp.	YARROW <sup>3</sup>	<i>Erigeron canadensis</i>	MARE'S TAIL <sup>3</sup>
<i>Aegopodium podagraria</i>	GOUTWEED	<i>Erigeron annuus</i>	ANNUAL FLEABANE <sup>3</sup>
<i>Agrostis gigantea</i>	REDTOP	<i>Erigeron strigosus</i>	DAISY FLEABANE <sup>3</sup>
<i>Agrostis stolonifera</i>	CREEPING BENTGRASS	<i>Euonymus alatus</i>	BURNING BUSH
<i>Ailanthus altissima</i>	TREE OF HEAVEN	<i>Euonymus fortunei</i>	WINTERCREEPER
<i>Alliaria petiolata</i>	GARLIC MUSTARD	<i>Euphorbia esula</i>	LEAFY SPURGE
<i>Alnus glutinosa</i>	EUROPEAN BLACK ALDER	<i>Fallopia japonica</i>	JAPANESE KNOTWEED <sup>1</sup>
<i>Ambrosia artemisiifolia</i>	COMMON RAGWEED <sup>1, 3</sup>	<i>Fallopia sachalinensis</i>	GIANT KNOTWEED <sup>1</sup>
<i>Ambrosia trifida</i>	GIANT RAGWEED <sup>1, 3</sup>	<i>Fallopia × bohemica</i>	BOHEMIAN KNOTWEED <sup>1</sup>
<i>Anthriscus sylvestris</i>	WILD CHERVIL	<i>Frangula alnus</i>	GLOSSY BUCKTHORN
<i>Arctium minus</i>	COMMON BURDOCK	<i>Hedera helix</i>	ENGLISH IVY
<i>Berberis thunbergii</i>	JAPANESE BARBERRY	<i>Hemerocallis fulva</i>	ORANGE DAYLILY
<i>Brassica nigra</i>	BLACK MUSTARD	<i>Heracleum mantegazzianum</i>	GIANT HOGWEED <sup>1</sup>
<i>Bromus inermis</i>	SMOOTH BROME	<i>Hesperis matronalis</i>	DAMES ROCKET
<i>Bromus tectorum</i>	DOWNY BROME	<i>Humulus japonicus</i>	JAPANESE HOPS
<i>Butomus umbellatus</i>	FLOWERING RUSH	<i>Hydrilla verticillata</i>	HYDRILLA
<i>Cannabis sativa</i>	MARIJUANA <sup>1</sup>	<i>Hydrocharis morsus-ranae</i>	EUROPEAN FROGBIT
<i>Carduus nutans</i>	MUSK THISTLE <sup>1</sup>	<i>Hypericum perforatum</i>	COMMON ST. JOHN'S WORT
<i>Celastrus orbiculatus</i>	ASIAN BITTERSWEET <sup>1</sup>	<i>Ipomoea purpurea</i>	MORNING GLORY <sup>2</sup>
<i>Centaurea maculosa</i>	SPOTTED KNAPWEED	<i>Iris pseudacorus</i>	YELLOW IRIS
<i>Chenopodium album</i>	LAMB'S QUARTERS <sup>2</sup>	<i>Lespedeza cuneata</i>	SERICEA LESPEDEZA
<i>Cirsium arvense</i>	CANADA THISTLE <sup>1</sup>	<i>Ligustrum</i> spp. (non-native)	PRIVET (non-native)
<i>Cirsium vulgare</i>	BULL THISTLE	<i>Lolium multiflorum</i>	ANNUALRYE/ITALIAN RYEGRASS
<i>Conium maculatum</i>	POISON HEMLOCK <sup>1</sup>	<i>Lonicera</i> spp.	HONEYSUCKLE (non-native) <sup>1</sup>
<i>Cornus racemosa</i>	GRAY DOGWOOD <sup>3</sup>	<i>Lotus corniculatus</i>	BIRDS FOOT TREFOIL
<i>Cynanchum louiseae</i>	BLACK SWALLOW-WORT	<i>Lysimachia nummularia</i>	MONEYWORT
<i>Cynanchum rossicum</i>	PALE SWALLOW-WORT	<i>Lythrum salicaria</i>	PURPLE LOOSESTRIFE
<i>Cyperus esculentus</i>	YELLOW NUTSEDGE <sup>3</sup>	<i>Marsilea quadrifolia</i>	EUROPEAN WATERCLOVER
<i>Dactylis glomerata</i>	ORCHARDGRASS	<i>Medicago lupulina</i>	BLACK MEDIC
<i>Daucus carota</i>	QUEEN ANNE'S LACE <sup>2</sup>	<i>Medicago sativa</i>	ALFALFA
<i>Dioscorea oppositifolia</i>	CHINESE YAM	<i>Melilotus albus</i>	WHITE SWEET CLOVER
<i>Dipsacus</i> spp.	TEASEL <sup>1</sup>	<i>Melilotus officinalis</i>	YELLOW SWEET CLOVER
<i>Echinochloa crus-galli</i>	BARNYARD GRASS	<i>Microstegium vimineum</i>	JAPANESE STILTGRASS
<i>Egeria densa</i>	BRAZILIAN WATERWEED	<i>Morus alba</i>	WHITE MULBERRY
<i>Eichhornia crassipes</i>	WATER HYACINTH	<i>Myosotis sylvatica</i>	GARDEN FORGET-ME-NOT
<i>Elaeagnus angustifolia</i>	RUSSIAN OLIVE <sup>1</sup>	<i>Myriophyllum aquaticum</i>	PARROT FEATHER
<i>Elaeagnus pungens</i>	THORNY OLIVE <sup>1</sup>	<i>Myriophyllum spicatum</i>	EURASIAN WATERMILFOIL

# INVASIVE SPECIES LIST, CONTD.

<i>Myosotis scorpioides</i>	WATER FORGET-ME-NOT	<i>Typha angustifolia</i>	NARROWLEAF CATTAIL <sup>3</sup>
<i>Najas minor</i>	BRITTLE WATERNYMPH	<i>Typha latifolia</i>	COMMON CATTAIL <sup>1,3</sup>
<i>Nepeta cataria</i>	CATNIP	<i>Ulmus pumila</i>	SIBERIAN ELM
<i>Nymphoides peltata</i>	YELLOW FLOATING HEART	<i>Verbascum blattaria</i>	MOTH MULLEIN <sup>2</sup>
<i>Oenothera biennis</i>	EVENING PRIMROSE <sup>3</sup>	<i>Verbascum thapsus</i>	COMMON MULLEIN <sup>2</sup>
<i>Onopordum acanthium</i>	SCOTCH THISTLE	<i>Vinca minor</i>	PERIWINKLE
<i>Pastinaca sativa</i>	WILD PARSNIP	<i>Xanthium strumarium</i>	ROUGH COCKLEBUR
<i>Phalaris arundinacea</i>	REED CANARY GRASS		
<i>Phragmites australis</i> (non-native)	COMMON REED (non-native)		
<i>Pistia stratiotes</i>	WATER LETTUCE		
<i>Poa pratensis</i>	KENTUCKY BLUEGRASS		
<i>Populus alba</i>	WHITE POPLAR		
<i>Populus deltoides</i>	COTTONWOOD <sup>3</sup>		
<i>Potamogeton crispus</i>	CURLY-LEAF PONDWEED		
<i>Pueraria montana</i> var. <i>lobata</i>	KUDZU <sup>1</sup>		
<i>Ranunculus ficaria</i>	LESSER CELANDINE <sup>1</sup>		
<i>Rhamnus cathartica</i>	COMMON BUCKTHORN		
<i>Robinia pseudoacacia</i>	BLACK LOCUST		
<i>Rorippa nasturtium</i>	WATERCRESS		
<i>Rumex acetosella</i>	SHEEP SORREL		
<i>Rumex crispus</i>	CURLY DOCK		
<i>Rosa multiflora</i>	MULTIFLORA ROSE		
<i>Rubus</i> spp.	RASPBERRY/BLACKBERRY <sup>3</sup>		
<i>Salix interior</i>	SANDBAR WILLOW <sup>3</sup>		
<i>Saponaria officinalis</i>	BOUNCING BET		
<i>Schedonorus arundinaceus</i>	TALL FESCUE		
<i>Securigaria varia</i>	CROWN VETCH		
<i>Setaria</i> spp.	FOXTAIL/MILLET <sup>2</sup>		
<i>Silene latifolia</i> var. <i>alba</i>	BLADDER CAMPION		
<i>Solidago altissima</i>	TALL GOLDENROD <sup>3</sup>		
<i>Solidago canadensis</i>	CANADA GOLDENROD <sup>3</sup>		
<i>Solidago sempervirens</i>	SEASIDE GOLDENROD		
<i>Sonchus arvensis</i>	PERENNIAL SOWTHISTLE <sup>1</sup>		
<i>Sorghum alnum</i>	COLUMBUS GRASS <sup>1</sup>		
<i>Sorghum halepense</i>	JOHNSONGRASS <sup>1</sup>		
<i>Symphotrichum lateriflorum</i>	SIDE FLOWERING ASTER <sup>3</sup>		
<i>Symphotrichum pilosum</i>	HAIRY ASTER <sup>3</sup>		
<i>Tamarix</i> spp.	SALT CEDAR <sup>1</sup>		
<i>Tanacetum vulgare</i>	COMMON TANSY		
<i>Taraxacum officinalis</i>	COMMON DANDELION <sup>2</sup>		
<i>Thlaspi arvense</i>	FIELD PENNYCRESS <sup>2</sup>		
<i>Torilis japonica</i>	JAPANESE HEDGE PARSLEY		
<i>Toxicodendron radicans</i>	POISON IVY <sup>3</sup>		
<i>Trifolium pratense</i>	RED CLOVER <sup>2</sup>		
<i>Trifolium repens</i>	WHITE CLOVER <sup>2</sup>		

- 1 Species classified as a Noxious Weed in the State of Illinois as of the date of this document
- 2 Species considered common weeds requiring control, not specifically considered invasive
- 3 Species considered native (or questionably native) in the State of Illinois, but often has an aggressive growth behavior that may require control on a case-by-case basis



# SUBMITTAL CHECKLIST

## General Requirements

- Four complete bound sets of the intended construction plans which must include a complete sheet index and the original signature & seal of the professional designer, landscape architect, or engineer
- One set of specifications, if not included in the drawings themselves, stamped with the seal & signature of the professional designer, landscape architect, or engineer
- Completed and signed application forms xyz
- Brief description of the proposed project including the type of development, total parcel or site size, size of the area under development
- Provide estimated schedule of operation

## Cover Sheet

- Name of project
- Common address and legal description of the site where the development will take place
- Index of Sheets
- Location Map
- Name, telephone number, and address of owner/ developer
- Name(s), telephone number(s), and address(es) of landscape architecture, engineering and/or consulting firms
- List of utility companies with telephone numbers providing services for the site
- General construction notes (on this sheet or attached sheet)
- Site benchmark tied to USGS datum

## Site Plans

- Outboundary information including property lines, lot dimensions, and all pertinent recorded easements
- North arrow and graphic scale of at least one inch to 100 feet or less
- Legend
- Date of original preparation and any revisions
- Total acreage of site
- Adjacent parcel owner information
- Existing and proposed building structures and streets or alleys
- Size and location of existing trees
- Show the location of utilities on site

## Restoration Plans

- North arrow and graphic scale of at least one inch to 100 feet or less
- Legend
- Match lines and/or plan sheet key (if necessary)
- Property or boundary lines
- Location of all access and staging areas
- Existing and proposed structures, parking lots, driveways, sidewalks, pathways, trails, and other impervious areas on the site
- Delineation of any existing wetlands and wetland buffers on or within 100 feet of the site
- Size and location of proposed detention or retention basin(s) including high water level, normal water level, and open water elevations
- Size and location of existing trees and vegetation areas on the site
- Tree protection fencing for all trees over 24" to be protected on site located within construction zone
- Clearing and treatment areas and strategies including existing vegetation, trees, and/or shrubs to be removed and methods for removal (for example mechanical removal, hand cutting, herbicides etc.)
- Proposed plant schedule and species lists with scientific names, plant sizes, and quantities
- Location of all proposed plants and seeding areas
- Location of all proposed waterfowl enclosures on plan or described in specification
- Plant installation details

**Grading and Utility Plan checklists found on following page**

# SUBMITTAL CHECKLIST, CONTD.

## Grading and Utility Plans

- Delineated limits of any flood protection areas on the site
- Delineation of the pre-development and post-development regulatory floodplain and regulatory floodway
- Delineation of any existing wetlands and wetland buffers on or within 100 feet of the site
- Construction access to site
- Hauling routes
- Provide existing and proposed contours at 1 foot intervals of the entire site and 100 feet beyond the site
- Top of foundation, lowest floor, lowest entry elevation, and floodproofing elevations of all existing structures within 100 feet of the development area
- Show grading limits
- Estimated grading quantity
- Size and location of existing trees
- Existing stormwater facilities including pipes, field tile, culverts, and inlets on the entire site and 50 feet beyond the site
- Existing utilities including sanitary, storm, water main, or any other utilities that existing on the site
- Show all proposed improvements which includes but is not limited to:
  - Storm sewers
  - Sanitary sewers and laterals
  - Water lines, hydrants, valves, and meter settings
  - Streets
  - Street lights & street signs
  - Sidewalks and handicap ramps
- Information regarding the invert and rim elevations, pipe sizes, pipe lengths, and material types for all proposed improvements
- Size and location of proposed detention or retention basin(s) including high water level, normal water level, and open water elevations
- Siltation and erosion control and details
- Siltation basins and calculations
- Density of proposed fills
- Show any proposed retaining walls and construction details
- Note on plan to provide Village with copy of grading compaction test results



# EXAMPLES OF INSTALLATIONS



Existing Conditions - A retention basin "Green Retrofit". Planted in July 2004, notice there is nothing growing in the water.



One week after planting - Photo illustrates goose exclusion, erosion control blanket, shoreline plug planting, and aquatic plug planting (July 2004).



One year after planting - There is a mass establishment of native wildflowers and wetland vegetation even during drought (July 2005).



Two years after planting - There is a beautiful and functional wildflower and wetland planting that serves as habitat for local wildlife. The wetland plants cover the basin bottom and increase water quality (July 2006).



# EXAMPLES OF INSTALLATIONS



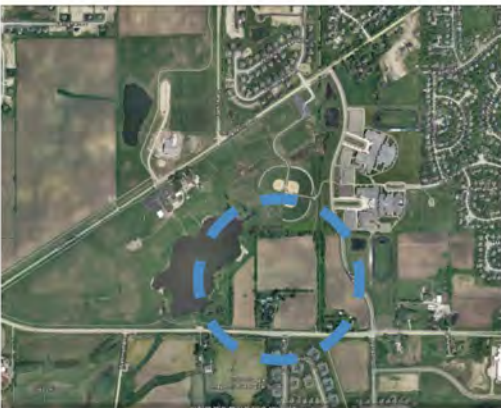
Existing Conditions - Agricultural Farm Field in Illinois (2008)



Two years after restoration - Black-eyed Susan in full bloom (July 2010).



Monarda & Ratibida in bloom after three years of stewardship after installation which included mowing and selective herbicide applications to control invasive species and promote the growth of native species. (July 2011).



Aerial photography showing the drastic difference and increased forb presence before and after restoration.

# HYDROGRAPH INFORMATION

## Storm Design Hydrographs

It is important to understand the basics of stormwater management design, because how a basin functions hydrologically directly affects the species selection, installation and management methodologies regarding native planting. First, in order to appropriately size a stormwater management system, the time of concentration (TOC) must be calculated for the basin. TOC is the time that it takes for drops of water to concentrate after falling on your site during a rain event and travel to the basin where it will be detained. Next, the total potential volume of water must be calculated. Typically the “100-year” storm event is used as a worst case scenario, this simply means that there is a 1 in 100 (or 1%) chance that a rainfall of this caliber will occur in a given year and is based off of historical rainfall data. TOC and water volume calculations are also typically figured for the smaller, more common rainfall events as well including the 50-year (2%), 25-year (4%), 10-year (10%), 5-year (20%) and 2-year (50%) storm events. Based upon TOC and water volume calculations, all basins, swales and pipes are designed to accommodate peak flows and water volume. The data produced can be displayed graphically in what is termed a Hydrograph (Figure 3-9). This graph shows a detention basin’s 100-year, 50-year, and 25-year peak water levels and duration of water presence. Figure 3-10 is the data for the 25-year storm event used to create the graph. The first column of the table is the amount of time that passes and the second is the water level. For example, during a 25-year storm event a basin might have zero inches of standing water after 15 minutes, but as the storm progresses more water will accumulate and the table will show an increase of volume (i.e. 0.75 feet of water may be present after 10 hours, 1.0 foot after 14 hours, etc.). Once the basin reaches its peak, the numbers will start to decline.

This information is critical when developing a planting plan for a basin or body of water. If it is known that a certain level of the basin will be inundated with water for long periods of time, it is best to choose plants that will thrive in saturated conditions. If the graph illustrates that the water will rarely reach a higher level and the plants will not be inundated, species that tolerate dry conditions should be specified. Thoughtful planting design and seed selection gives consideration to not only the colors and textures of the plants but also the conditions in which they can live and thrive.

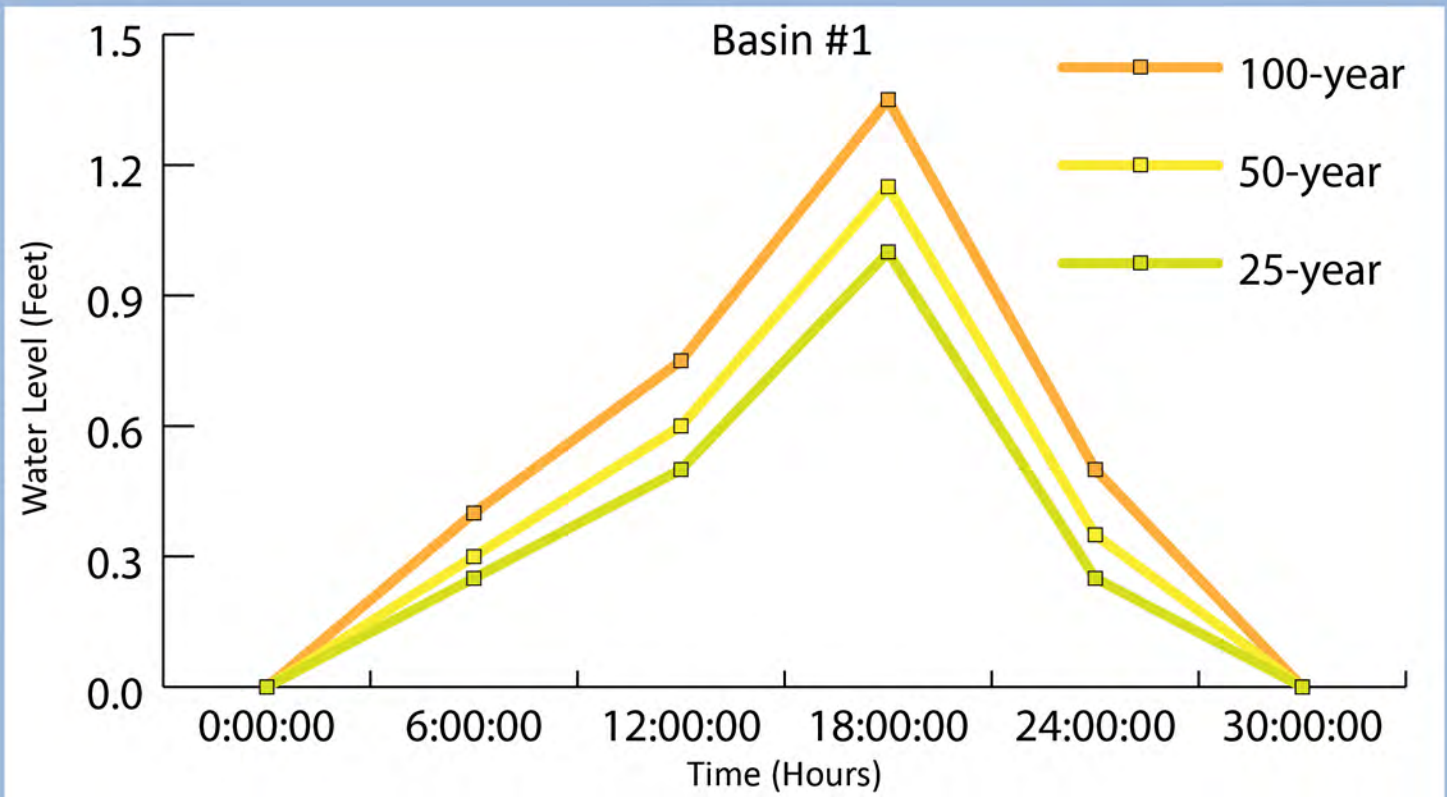


Figure G-1: Storm Hydrograph

Basin #1 - 25 Year Storm Event		
Days	Hours	Level (ft)
0	0:00:30	0
0	8:29:00	0.25
0	12:07:30	0.5
0	13:36:00	0.75
0	14:47:00	1
0	16:04:00	1.09
0	17:44:30	1
0	19:49:00	0.75
0	22:11:30	0.5
1	1:20:00	0.25
2	13:45:30	0
3	23:59:30	0
4	0:00:00	0

Figure G-2: Storm Hydrograph Data



Figure G-3: Successful Naturalized Detention Basin

# REFERENCES & ADDITIONAL INFORMATION

Village of Lemont

Unified Development Ordinance

<http://www.lemont.il.us/documentcenter/view/124>

USDA Illinois Native Plant Guide – General Design, Application, & Management Considerations

<https://archive.epa.gov/greenacres/web/html/chap1.html>

A Source Book on Natural Landscaping for Public Officials

<https://archive.epa.gov/greenacres/web/html/chap1.html>

City of Chicago: A Guide to Stormwater Best Management Practices

[http://www.cdfinc.com/xm\\_client/client\\_documents/Chicago\\_GuideTo\\_Stormwater\\_BMPs.pdf](http://www.cdfinc.com/xm_client/client_documents/Chicago_GuideTo_Stormwater_BMPs.pdf)

EPA Storm Water Technology Fact Sheet – Wet Detention Ponds

<http://nepis.epa.gov/Exe/ZyPDF.cgi/200044D0.PDF?Dockey=200044D0.PDF>

Natural Resources Conservation Service: Bioswales. . . absorb and transport large runoff events

[http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs144p2\\_029251.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_029251.pdf)



# GLOSSARY

**Acceptable Species:** Vegetative species that have been seeded or planted as specified and/or volunteer native species with a C-value of 2 or greater, except for those species listed in Appendix-A.

**Aerial coverage:** The vegetation covering the ground surface above the ground surface; including all leaves, stems, flower parts, etc. Aerial coverage can be visualized by considering a bird's-eye view of the vegetation.

**Cover:** The vertical projection of vegetation from the ground as viewed from above.

**Density:** Numbers of individuals or stems per unit area.

**Dominant Species:** Plant species or species groups, which by means of their number, coverage or size, have considerable influence or control upon the conditions or existence of associated species.

**Erosion:** The washing away or dislodging of soil by water, wind or ice.

**Established:** Establish is defined in botany as a species being allowed to thrive and reproduce.

**Invasive Species:** An undesirable species of plant or animal, often non-native, that competes with desirable, native plants and animals for light, space, water, food and nutrients. An invasive species, left untreated, will destroy the integrity of an ecosystem and will often become the only plant or animal inhabiting a particular landscape.

**Native Species:** 1) an indigenous species that is normally found as part of a particular ecosystem. 2) a species that was present in a defined North American area prior to European settlement.

**Ocular Assessment:** The act of making a professional judgment about something based on what is physically seen by the observers eyes.

**Plant Community:** A group of plants that need a particular set of environmental conditions (i.e. light, soil type, moisture) in order to thrive. Examples include dry prairie, mesic prairie, wet prairie, wetland, emergent, savanna, dry-mesic woodland, etc.

**Planting Area:** The physical area(s) of a project site receiving site preparation, planting and/or stewardship activities. A plant community may consist of multiple planting areas.

**Quadrat:** Small areas of a standard size placed along transects or selected at random to act as representative samples for assessing the local distribution of plants or animals.

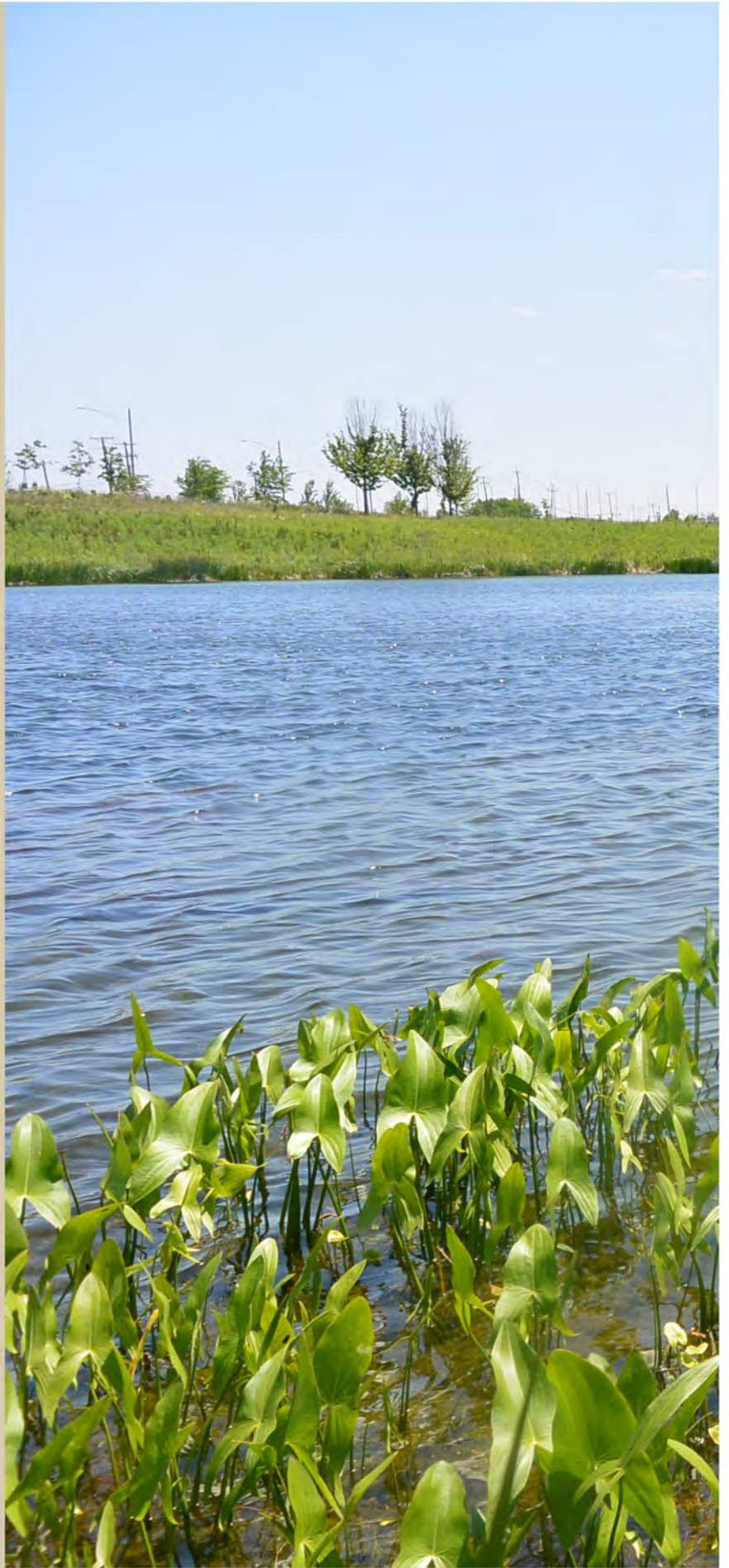
**Remnant:** A surviving trace or vestige of vegetation that has remained undisturbed or minimally undisturbed since European settlement. Remnant habitats are often found in fragmented form dissected by human development with a highly diverse number of native plants or native indicator species.

**Transect:** A straight line through a natural feature or across the earth's surface, along which observations are made or measurements taken.

**Vegetative Cover:** The percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Vegetative cover may exceed 100 percent.

**Vigorous:** Well-rooted in soil and displaying healthy, strong vegetative growth.





Village of Lemont, Illinois  
418 Main Street  
Lemont, IL 60439

## **V. GENERAL DISCUSSION**

### **A. Update from Village Board**

Mrs. Valone stated there is nothing that has come before the Village Board. She asked if any of the Commissioners had anything for her.

Chairman Spinelli said there was a newly installed fence on the southwest corner of Wend and Walter. It is a solid six foot fence that is approximately three feet off the sidewalk on the side yard.

Mrs. Valone stated she will look into it.

Chairman Spinelli asked if they found out anything regarding the shed that was put on a slab in Smith Farms subdivision.

Mrs. Valone said when she originally approved the shed it was contingent on the approval from the Village Engineer. Sometime between her review and the engineers review it switched to a concrete base. At some point the Village Engineer reviewed it with a concrete base, however it was not supposed to have steps on it.

Chairman Spinelli stated it is in an easement on a concrete slab. The reason he is bringing it up is because he has had neighbors held to the ordinance. The pool that was built on that property was also built in the drainage easement.

## **VI. AUDIENCE PARTICIPATION**

None

Chairman Spinelli asked if there were any further comments or questions. None responded. He then called for a motion to adjourn.

## **VII. ADJOURNMENT**

Commissioner McGleam made a motion, seconded by Commissioner Kwasneski to adjourn the meeting. A voice vote was taken:

*Ayes: All*

*Nays: None*

*Motion passed*

*Minutes prepared by Peggy Halper*