

**Gemmer PRD**

Site Address: **1125 – 172<sup>nd</sup> St NE, Marysville WA 98271**

Parcel Numbers: **310519-004-009-00, 310519-004-011-00**

Zoning: **R-6.5 Multi-Family High & Mixed Use**

Designation: **R-6.5 Multi-Family High & Mixed Use**

Shoreline: **NA**

Flood Plain Designation: **NA**

Area: **1,272,435 sf (29.63 acres) Gross Project Area**

**SE ¼ Section 19, Township 31N, Range 05 East**

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## **Plat Narrative**

**Summary:** The proposal is to develop this 29.63 acres per its R-6.5 zoning as a PRD using 22G.080. Allowed Base Density would be about 154 homes. Using the Residential Density Incentives per 22C.090 to the maximum of 20% density bonus, another 31 homesites could be allowed or a total of 185 might possibly be allowed. This proposal is for a total of 182 lots.

The proposal is on two parcels located in the very NW corner of the city limits of Marysville north of 172<sup>nd</sup> St NE and across from Lakewood High School. The property is bordered by 11<sup>th</sup> Ave NE on the west and rural Snohomish County property along the north property line. The eastern parcel (...1100) has split zoning and is bordered on the east by Burlington Northern Railway. The Mixed-Use portion of this property borders the RR property and fronts on 172<sup>nd</sup>.

The western parcel, all zoned R-6.5, of this assemblage proposal has about 290 feet with frontage on 172<sup>nd</sup> St NE. Another 300 feet borders up with the back side of existing residential lots that front on 172<sup>nd</sup>. It also has frontage on 11<sup>th</sup> Ave NE.

The eastern parcel currently has mixed zoning with the R-6.5 portion in the NW portion of the parcel. The Mixed-Use portion has some frontage on 172<sup>nd</sup> broken up by the Service Station Parcel and existing small lots including the old Lakewood Store property in the SE corner.

The portions of the assembled parcels zoned R-6.5 does have one homesite in the SW corner that will be saved, another old house will be removed. Part of the residentially zoned property is in pasture that is actively farmed for a hay crop or two each year. There are two wooded portions, one in the NW corner of the site; this wooded area does have a small Category III Wetland. The second area is in the eastern parcel and has several groves of trees. Over the years, this area has had some recreational use by the family that has lived on this property for two generations.

There is also an offsite wetland in the NE corner of the property that has buffers extending onto this property.

**Bulk Matrix: Density and Dimensional Criteria:**

1. Dwelling Units Per “Net Project Area” has the Base as 6.5 Lots/acre. With NPA of 23.7 acres up to 154 lots could be developed—the proposal is for 182 lots that intend on using the Residential Density Incentives to get to 20% increase in density. The NPA was determined using the option for a 20% limit on deductions for roads.
2. Street setbacks are 20 feet to the garage and some homes may have 10 feet to living areas.
3. Buildings will have 10-foot separation with a 5-foot setback to the side lot line.
4. Rear Yard Setbacks are minimum 10 feet most all yards have 20’.
5. Total Impervious Surfaces with roofs, driveways, and roads is less than 65% and will be kept under the 70% Maximum.
6. Minimum lot widths allowed are 30 feet and the minimum lot width proposed is 40 feet.
7. Minimum lot area allowed is 3,500 SF and minimum lot area proposed is 3,514 SF with most lots more than 3600 SF.
8. Driveways are minimum 20 feet and we are providing 3 parking stalls on each lot where minimum is 3 stalls per detached single-family dwelling. Additional parking will be provided along the streets.

**Split Zoned Parcel:** There are two parcels that are part of this proposal, the western parcel (31051900400900) is zoned R-6.5 in its entirety. The eastern parcel (31051900401100) is more complicated. Of the approximate 27.9 acres, approximately 11.2 acres are zoned R-6.5 and 16.7 acres are zoned Mixed Use. Having one parcel with two different zoning designations is not desirable.

There is not an existing legal description of the exact zoning boundaries but North Peak Survey did prepare a zoning line that is based on evidence that was available and graphics provided by the City’s maps. These types of zoning designations are typically broad-brush strokes made over larger general areas; they are not made with any site detail for site specific efficiencies.

The zoning boundaries, as depicted, create some “awkward” lines and it would be desirable to fix those lines slightly to make the property more useable and put the two zoning areas on separate parcels.

The scope of this project would be to separate the R-6.5 zoned property from the Mixed-Use portion of this parcel. The proposal would be to move the existing western parcel line dividing the two parcels of this proposal to wholly include the R-6.5 zoning in one parcel and Mixed Use in the other. This would eliminate the split zoning on the eastern parcel with the residential project combined into one properly zoned parcel. We are requesting a slight modification to the zoning lines dividing the classifications for more efficient uses of the land in each zone.

**The below will likely be hard to follow without Sheet P2 of the submittals in hand.**

Recap: To rectify the “split zoning” inconvenience, we will submit for a Boundary Line Adjustment moving the north-south parcel line between the two parcels. The revised parcels will be consistent with slightly modified zoning lines with R-6.5 zone in one parcel and Mixed Use in the other.

As mentioned above, the zoning boundaries are basically graphic and have no legal description. We propose slightly altering these zoning lines. North of the Service Station parcel, the graphical zoning north-south line is about 80 to 85 feet east of the east side of the Gas Station Parcel. This creates a “choke point” between the BNRR property and the R-6.5 zoned portion of the parcel. We propose moving that parcel about 85’ west to align with the projected north-south line of the east boundary of the Service Station parcel. This will make that portion of the MU property more useable.

In part, to make up for the above expansion of the MU, the proposal will reduce the MU area north of the Service Station and trade it for R-6.5. The west zoning break line will also be moved 15 feet east to line up property lines with the east line of the residential lots to the south (please see Sheet P2).

The current area of the MU zoning is 19.13 acres, including the Service Station Parcel; 1.38 acres will be added to the MU by widening the “pinch” between the RR Property and the R-6.5 zoning. The current R-6.5 zoned area, including both parcels, is 29.23 acres and a net of .4 acres will be added to that for the proposed total of 29.63 as the project area and the total R-6.5 zoning.

This proposed re-aligning of the zoning lines is what is best for the site making both parcels more usable and efficient. It is not an exact one-for-one trade as this adds 0.41 acres to the 29.23 acres of R-6.5 and reduces the current MU zoning from 19.13 acres to 18.71 acres (this area includes the Service Station Parcel). This makes a useful and efficient boundary for both the MU and R-6.5.

One little anomaly that makes it ‘not quite perfect’ when using the BLA as the tool to divide the zoning differences into two separate parcels, the zoning boundary should go to the existing Service Station north property line but that would “divide” the western portion of the MU from the eastern portion. This would create the “illusion” of creating one additional lot. To resolve that issue, this proposal leaves a 20-foot strip behind the Service Station as a connecting corridor between the two segments of the MU zoning. This 20-foot strip is proposed to be used as a landscape buffer to the R-6.5 zone.

Another option, probably the better option, would be to do a limited paper Shortplat if the City would consider that.

**Open Space and Recreation (Per Conceptual Plan Used for this Pre-Application):** a critical element of a Planned Residential Development is the provision of 15% of the Net Project Area (NPA) as Open Space. Our Concept Plan has 1,032,473 sf as NPA that would require 154,871 sf minimum but we are providing 271,270 sf or 26.3% of the site. Of the total required Open Space, 35% is to be Active Open Space or 54,205 sf. We have designated 3 Tracts as Active Open Space and will be providing recreational amenities in those tracts. The total of those Tracts are 135,660 sf and 55,620 sf of that is observable from the Public Road. We believe strongly that this criteria of having to have Active Open Space on a Public Road is misapplied but are demonstrating that we do have Active Open Space that can meet this version of the criteria.

This project is providing numerous Tracts with Open Space integrated throughout the development and is accessible by all in the community, and has visibility from the public and many surrounding houses. The Open Spaces will provide very diverse and varied recreational opportunities to the residents. A very large percentage of the homes back up to these open space recreational areas.

The most used recreational amenities in communities like this are trails and open grass fields or areas where all generations of families can enjoy. This proposal has both. It has trails, grass play fields that will allow for volleyball, badminton, biddy soccer, and other net sports. There will be areas that allow for lawn sports like bocce ball, lawn bowling, and croquet. More on that below.



There is a wooded area in the NW corner of the site that will remain and can be used for passive recreation.

Within the proposed Open Space areas are Bio-retention cells that will be surfaced with a Micro-clover mix and is designed with surface protection to allow for active play and functional SWM use. The whole site is relatively level so grades and surfaces are suitable for recreation.

Open space area that is designated as the Active Open Space will provide manicured areas in the SWM bio-cells for Net Sports such as Badminton, Volleyball, or Crossnet-4 square. There will also be Soccer Goals to allow for family field sports such as soccer, flag football, dodgeball, or even whiffle ball. The net sport area will look similar to the badminton court above and to the right.



This Open Space configuration also provides for a robust Frisbee Golf Course; Frisbee Golf has been exploding in popularity in the United States and is great family activity allowing multiple generations to play together. It is one of the fastest growing sports in modern times, with a 33% increase in games played between 2019 and 2020 alone.



The multiple Open Space Tracts have no dimension less than 30' that are counted unless there are connective paths allowing residents to move from one area to another.

Each Lot will have a rear yard area at least 40' x 10' wide for 400 sf of Private Space.

**Housing Mix:** Existing Homes within 300 feet of the property are single-family detached. To the east and along the east side of the south property line is a Mixed-Use Zoning with several small businesses there including a Gas Station and Store. South of 172<sup>nd</sup> is the Lakewood High School.

This project is located in the very NW corner of Marysville with properties to the north and west being rural residential. There is a new rural residential plat in process to the north. Across 11<sup>th</sup> Ave NE to the west are several existing single family homes, a couple on larger parcels that can be further subdivided and several on non-conforming lots.



The Mixed Use Property to the east will likely be built out as apartments. Properties in the Mixed Use zone to the south and along 172<sup>nd</sup> will likely develop as commercial with perhaps living units above—classic Mixed Use Development.

**Basic Yield:** The Gross Site Area is 29.63 Acres but the Net Project Area after deducting the listed and appropriate deducts is 23.70 Acres. The Net Project Area times 6.5 is 154.05 lots as a Base Yield. Details of Calculations for Net Project Area are on PRD Preliminary Site Plan

**Residential Density Bonus:** using provisions of 22C.090, residential projects can increase yields by offering or providing elements from a complex list of options. Up to 20% bonus can be obtained over Base Density; that would allow for 184 lots (actually 184.86 or 185 rounded up). Details are on spreadsheet on the PRD Preliminary Site Plan.

One Bonus option being utilized for this project is use of Storm Drainage Facilities as Active Recreation by providing a recreational surface in the bio-cell that supports active use and stays permeable. Recreation uses that have been used on other projects include Bidy Soccer, Volley Ball, Badminton, Bocce Ball, and other ‘grass-court’ games.

Some Stormwater Tracts are also providing elements for Passive Recreation with Picnic areas with Benches and Tables, Pedestrian Paths, and Open play areas.

The project will provide 4,275 linear feet of perimeter fence and buffer landscaping and at 1 unit per 500 lf, that would be 8.6 units.

While these calculations could provide supposedly 43 Bonus Dwellings, there is a limit of 20% over Base Density or with 154 Dwellings as a base, only 30.8 Bonus Lots are the maximum. Final calculations could allow 184 lots and this proposal is for 182 lots.

**Design Criteria or Design Elements:** MMC 22G.080.050(2)(c) requires the development to achieve at least two results from a list of 8 options. This project would be offering three.

Per (c)(i), The layout and street design improve circulation patterns with road system providing alternate routes back to 172<sup>nd</sup> St NE. It provides 3 entrance-exit points with one directly back to 172<sup>nd</sup> and two intersecting 11<sup>th</sup> Ave NE to the West with an indirect route to 172<sup>nd</sup> St SE.

Per (c)(iii), Recreational facilities both active and passive are being provided in Stormwater Management Tracts and we are providing 175% more Open Space than the minimum. We are also providing nearly 3 times the space that can be used for Active Recreation versus the minimum. To keep with interpretations by some reviewers at the City that Active Open Space has to be observable from a Public Road (something we vehemently disagree with), we are showing that more than the minimum is observable from the public roads.

And per (c)(iv), we are providing a minimum 10’ landscape buffer between lots and exterior boundaries of the site. A fence will likely be put along the lot lines behind the landscape plantings that will be showing to the public.

**Street, Sidewalks, and Parking:** The Streets are to be designed per the City Standards for a PRD road with possible Modifications as allowed Per 22G.080.080.

Access to the site will be on the existing “road” west of the Service Station and across from one of the entries into Lakewood High School. There is a 30-foot access easement on the Service Station Property. That will be widened to the west to 50 feet to allow for a full residential road section.

The LNMP shows connectors that extend along the east property line to the northern boundary of this property and the City Limits from 172<sup>nd</sup> St NE. That intersection would only be 200 feet from the RR Tracks.

The eastern north-south concept connector running adjacent and parallel with BNRR property as an extension of 19<sup>th</sup> Drive NE would dead end into the offsite wetland. This would not be practical or useful. The property to the north has a Rural Plat Proposed and nearing approval. The likelihood the Puget Sound Regional Council would allow an expansion of the Urban Growth Boundary to the north is extraordinarily remote given the current attitude of that board.

The LNMP also shows an east-west connector along this northern property line, at the City Limits, with an alignment that would be 178<sup>th</sup> St NE. This east-west road is also shown crossing the BNRR Tracks and would have to be constructed in the buffer of that offsite wetland. This road will never be able to cross the tracks unless there is an overpass built; that is a remote possibility. The City has a lot more important overpasses to build, including one at 172<sup>nd</sup> St NE and 156<sup>th</sup> St NE.

We believe we are proposing reasonable road system within this plat. As the MU property develops, other connections may become relevant. We are not providing a connection with a public road to the east Mixed-Use property as that will be developed with Private Drive Aisles. Connecting a Public Road to a Private Road system does not make sense. It does not make sense to connect a public road through this eastern Mixed-Use parcel back to 172<sup>nd</sup> intersecting with 172<sup>nd</sup> St just 200 feet from the RR Crossing; that would really create a traffic “mess” at an already compromised intersection when trains are passing by.

The LNMP Plan does call for a Roundabout at the intersection with 11<sup>th</sup> Ave NE. It is called out to be one-lane circle and it may be assumed it will be similar to the roundabout at 174<sup>th</sup> St NE and 23<sup>rd</sup> Ave NE. This project has put an Open Space Tract that can allow for dedications of ROW without impacting the layout. The LNMP calls for an 82.5-foot ROW width at this end of 172<sup>nd</sup>; but the Tract allowed for future dedication would allow for 50’ on the north half of the street. That would allow for up to 100’ of ROW for 172<sup>nd</sup> if needed.

*Sidewalks:* are proposed per the PRD standard road section for all onsite roads. Frontage Improvements will be required along 11<sup>th</sup> Ave NE to the intersection of 172<sup>nd</sup>. All onsite sidewalks will connect to this frontage and will provide safe walking conditions for students walking to the Lakewood Schools.

This R-6.5 zone and this project will have about 290 feet on very west end of 172<sup>nd</sup> St NE. Sidewalks for this segment will be per the LNMP. The LNMP shows a 12-foot multimodal path and a 10-foot planter adjacent to a 11-foot travel lane. The multi-modal path will merge with the sidewalk on the

east side of 11<sup>th</sup> Ave NE. There will also be a crossing to the school. We have not detailed out this frontage improvement until details of the dedication can be resolved.

The Lakewood Schools are only 100 feet (across the ROW for 172<sup>nd</sup> from the SW corner of this project.

*Parking:* The PRD requires two parking spaces per lot/residence with 1 Guest Spot per lot/residence. There are 182 lots proposed with homes that will have two-car garages (no tandem). Two spaces in the garage will provide for the base number or 364 spaces. One tandem space in the driveway will provide for 182 Guest Spots. There will also be about 70 Guest Spaces along the streets in between driveways and along road segments without driveways.

*Driveway Access:* One hundred and eighty-two homes are proposed with 132 of these taking direct access to the residential road by driveway.

The PRD requires that 25% of the lots take access by shared driveways or Auto Courts; the 48 lots shown in this concept PRD satisfy that criterion by providing 27% of the homes having a shared access.

**Landscaping:** Landscaping will provide Street Trees along frontages and Plat Road. The Park Areas are extensively landscaped for their use. A ten-foot perimeter landscape and/or fence is proposed around the project.

**Maintenance Provisions:** Homeowners Agreements with Covenants, Conditions, and Restrictions will be provided with the Final Plat. There will be provisions for maintaining the parks and drainage facilities. Easements to the Stormwater Facilities will be provided to the City should their involvement become necessary to maintain functionality of the system.

**CPTED:** Crime Prevention through Environmental Design is required for Planned Residential Developments. Developments that are subject to Section 22C.010.290(5)(c) shall incorporate the following CPTED strategies into building design and site layout:

- (a) **Access Control:** having open access or multiple access points to a building/home increases potential for criminal intrusion. This is especially true if one or more of the access points are not observable by interested members in the community. For example, having two access points to a home with one being from an “Arterial” or road with a lot of drive-by traffic, traffic that has no real interest in the surveillance of the home, opens up a pathway for “criminals” to get into the homes unobserved. Having public access into the yard or home from one “end” of the home, especially if that access is from the side interior to the community and on a residential street, deters criminals from trying to enter a home. Members of a Community moving around on their community roads or sidewalks are more interested and observant of what is going on in “their” neighborhood. Those driving by on an arterial are thinking of getting to work or getting home.

The proposed layout offers public access to the homes from just one side, a side interior to the community where more interested observers will provide meaningful surveillance to the homes. The backyards will be fenced off or hedged off to any public access taking away that “hidden”

unobserved pathway for criminal access. This also provides a nice “private space” for the people living in this community.

The Active Recreation Space is intertwined throughout the community with many homes having this amenity out their backyard. These residents will also be able to observe and monitor what is going on in these spaces. Many elements of the open space are also placed on the community streets. The Passive Recreation area in the northwest corner of the community will be fenced to control access into the backyards of this portion of the community.

This Community proposal provides per the COM 22C.010.290 “...*Provisions of natural control limits access and increases natural surveillance to restrict criminal intrusion, especially into areas that are not readily observable.*”

- (b) Surveillance:** As with “Access Control”, access points to homes and recreational facilities need to be surveillable by interested observers. Primary access to homes should be from one side, and that side should be from the side where the most interested observers can view these entrances. That is having access from a *community side of the house* and not count on disinterested drivers on a high-volume road that is not an integral part of the community.

From the cities CPTED Guideline document “*Open Spaces and recreational areas should be located so that they can be observed from nearby homes.*” These are the homes of your neighbors and community that has a vested interest in keeping “their” community safe.

From COM Code “*Placement of features, uses, activities, and people to maximize visibility. Provision of natural surveillance helps to create environments where there is plenty of opportunity for people engaged in their normal behavior to observe the space around them.*” The people most engaged in having an interest in their neighbor’s homes and their parks are members of that community.

This Community proposal does have access to the homes from the interior of the Community and restricts access from outside with either fencing or hedging. As stated in the previous section, the Open Spaces and recreation areas are observable from nearby homes.

- (c) Territoriality/Ownership:** Having the Primary Entrance coming from the Community side of the home will “*encourage interaction between neighbors*”. Having a Primary Entrance out to High Volume Road not part of “your” community will not encourage this community interaction.

From COM Code it is important to provide “*Delineation of private space from semi-public and public spaces that creates a sense of ownership.*” Keeping the Primary Entrance to the Community side of the home allows for delineation of private space useful to the families that live in those homes. This as opposed to those homes that end up with an entrance at each end of the home with one coming from a “semi-public” side really removes any delineation of private space. Both useable ends of the homes end up accessible and unusable to as Private Space for families of the homeowner.

*Techniques are incorporated that reduce the perception of areas as “ownerless” and, therefore, available for undesirable uses.*

Examples of ways in which a proposal can comply with CPTED principles are outlined in the CPTED Guidelines for Project Design and Review, prepared by the city.



## Rezone Narrative

**Summary:** This proposal is not to actually “Rezone” any of the property to a new zoning classification but is to trade areas of existing zoning to make each area more efficient and productive. Specific reasons were described in the Plat Narrative.

Described in the Preliminary Plat Narrative, this project includes one parcel that has “Split Zoning”. The northwestern portion of the eastern parcel (TPN: 3105-004-011-00) is zoned R-6.5 but the southern and eastern portion of the same parcel is zoned for Mixed Use. It is not desirable, but not unheard of, to have split zoning on one parcel. The preference is to have one zone on one parcel.

The proposal here is to BLA the western parcel that is all R-6.5 Zoning to include the R-6.5 zone on the eastern parcel all into one R-6.5 zoned parcel and the remaining portion of eastern parcel to all have single zone of Mixed Use.

The reason this rezone is necessary is we are asking to trade areas of the existing zoning where portions of the Mixed Use would be expanded into the R-6.5 zone and portions of the R-6.5 zone would be expanded into portions of the Mixed-Use Zone. To recreate logical parcel lines though, does not result in a perfect foot-for-foot exchange. Of the 45 acres involved, there would be about a 0.42-acre gain in R-6.5 zone.

**Rezone Required:** Since an area of land zoned Mixed Use is being downzoned to R-6.5 and another portion is being up-zoned to Mixed Use, a rezone is required. The total affected area is about 3.17 acres with about 1.38 acres going from R-6.5 to Mixed Use and about 1.79 acres going from Mixed Use to R-6.5. MMC 22G.010.440 does allow for properties to make application to rezone property to a bordering zone without applying for a comprehensive plan map amendment if the proponent can demonstrate certain criteria per MMC 22G.010.440(2).

***MMC 22G.010.440(1)*** *A zone reclassification shall be granted only if the applicant demonstrates that the proposal is consistent with the comprehensive plan and applicable functional plans and complies with the following criteria:*

*(a) There is a demonstrated need for additional zoning as the type proposed;*

The definition of “need” is to “require (something) because it is essential or very important”. In this case, it is very important that first parcels are aligned in a single zone. Added to this need is that the resulting zones allow for logical boundaries consistent with other adjacent boundaries. Another partial reason for this request is that a portion of the existing MU zone has a choke point between a corner of adjacent properties and the boundary of the existing MU zone. This adjustment allows for more efficient use of the MU Zone. Similar arguments are made in other areas of the site where leaving narrow areas of MU zoning behind existing uses would allow for land that could not be efficiently used as MU and would be more efficiently used as R-6.5 per the current proposed PRD Application.

While it may not be “essential” it is “very important” lands are formed that will allow for efficient uses. This would certainly be consistent with keeping in line with the goals of GMA.

*(b) The zone reclassification is consistent and compatible with uses and zoning of the surrounding properties;*

This is not really a “reclassification” of the zoning, it is simply a trade of area of the zoning on the surrounding properties as they currently exist. Compatibility was an issue of the original decisions to make these zoning classifications. This small trade of areas would not impact the compatibility with surrounding properties.

*(c) There have been significant changes in the circumstances of the property to be rezoned or surrounding properties to warrant a change in classification;*

Again, we are not asking for a change in “classification”. We are just asking to adjust existing parcels and zoning boundaries to put each current zoning classification onto one parcel versus split zoning on one parcel. Second, we are wanting to adjust the zoning boundaries to more efficiently “line-up” with adjacent property uses and boundaries.

Since these parcels were originally classified, there has been changes in use and previous Boundary Line Adjustments that ended creating property lines and zoning boundaries that are in need of a little tweaking to make them more efficient.

*(d) The property is practically and physically suited for the uses allowed in the proposed zone reclassification.*

Again, this is not a request to reclassify zoning on any parcel. It is a request to tweak the boundaries of the current zoning to be consistent with surrounding land uses and property boundaries.

***MMC 22G.010.440(2) Property at the edges of land use districts can make application to rezone property to the bordering zone without applying for a comprehensive plan map amendment if the proponent can demonstrate:***

This property is at the “edge” of two land use districts and this proposal is requesting to trade areas of adjacent zoning classifications.

*(a) The proposed land use district will provide a more effective transition point and edge for the proposed land use district than strict application of the comprehensive plan map would provide due to neighboring land uses, topography, access, parcel lines or other property characteristics;*

The small tweaks requested have little impact on neighboring land uses and are internal to the property itself. This is not a change in land use districts or classifications. The same zoning is to be applied to each area but the internal boundary for those zones will be slightly altered.

*(b) The proposed land use district supports and implements the goals, objectives, policies and text of the comprehensive plan more effectively than strict application of the comprehensive plan map;  
and*

We are not changing the “land use district” or classification of the land use. Internally to the parcels involved and to the existing zoning classifications, we are asking for some adjustments to the boundaries and areas. We are essentially “swapping out” a small area zoned R-6.5 to make it MU and trading that area by rezoning a small area that is now MU to R-6.5.

This swap just makes the use of the land per each zoning more efficient without any compromise of to the goals, objectives, policies and text of the comprehensive plan. Since it is internal to the parcels involved, and not adjacent to a non-participating parcel, no other property is possibly impacted by a “change of use”.

Modifying the boundaries of these two existing “land use districts” does make each zone more useable. Making each area more usable is consistent with Comprehensive Plan Goal 18 which is to “Encourage the creation of a more desirable place to live and a quality standard of living for all citizens.”

*(c) The proposed land use change will not affect an area greater than 10 acres, exclusive of critical areas. (Ord. 2981 § 23, 2015; Ord. 2898 § 17, 2012; Ord. 2852 § 10 (Exh. A), 2011. Formerly 22G.010.420).*

The total affected area is about 3.17 acres with about 1.38 acres going from R-6.5 to Mixed Use and about 1.79 acres going from Mixed Use to R-6.5.

Thank you

Merle Ash  
Land Technologies Inc.

## GAMES AND ACTIVITIES THAT CAN BE PLAYED ON GRASS SURFACES—PREPARED BIOCELL SURFACES

### NET SPORTS:

**Volley Ball**—Indoor and beach volleyball are most viewed; grass courts do attract some of the best competition. One of the first activities set up at Family Picnics or outing is the Volleyball net.



**Badminton**—very popular in China but is perceived as a backyard sport in the U.S. It really is a Family Picnic activity in the U.S. even though it is an Olympic Sport. These days, 9 million people in the United States can be found “batting the birdie” around their backyards. Few backyard sports are easier so badminton is an activity anyone can play.



**Crossnet-4 square**—is a version of volleyball and the old four-square game played on school grounds as kids. It is a fun backyard game gaining in popularity as a Family Friendly Game





## LAWN SPORTS:

**Bocce Ball**—is the third most popular sport in the world, after soccer and golf, 25 million people in the U.S. alone play bocce. It is a nice social activity and is a great family game with intergenerational activity; a 4-year-old and an 84-year-old can play this game. The biocell surfaces, per our design, can make great Bocce Ball playing surfaces. The Regulation “Court” is 91’ x 13’ but Bocce Ball can be played at any dimension. It is one of the oldest target games played tracing back a couple thousand years.



**Croquet:** the game formally started professionally at Wimbledon in London in the 1850’s and had spread to the U.S. as a popular family activity. It is experiencing a resurgence with numerous Country Clubs setting up tournament programs. It is another multi-generational family activity enjoyed by from grandkids to grandparents. It is estimated that a 100,000 croquet sets are sold each year. There is a Puget Sound Croquet Club for the serious with opportunities to play casually or in tournaments.



**Horseshoes:** A game as old as the Roman occupation of Britain. Horseshoes is another multi-generational game. There is even Horseshoe Pits built by Harry Truman at the White House and recreated by George H. W. Bush. It is a common to see horseshoe pits at most parks and playgrounds





## FIELD SPORTS—BALL GAMES

The most used areas of any open space area are trails and open grass playfields. As a kid, we were always on the hunt for areas to play tag or flag football. Today soccer is a sport rising in popularity now ranking fourth behind football, basketball, and baseball. There can be many Soccer-Inspired “picnic” games like Double Relay, Kick-out Keep-away, Yellow Card Freeze Tag and many other family friendly versions. Our Biocells make excellent playing ‘fields’ for these field games and more. Some other family games, not all inclusive, are dodgeball, kickball, and Whiffle ball.



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**Frisbee Golf (Disc Golf)**—Played much like traditional golf, but without the “difficulties and expenses” of that game. A sport once dismissed has now matured into a thriving sport. It is another family friendly activity that can be played all year round and open to everyone at any skill level. It is estimated approximately 50 million rounds of disc golf were played in 2020. There are many options on course lengths and complexities from “3-hole to 18-hole”.



Disc Golf is one of the fastest growing sports in America with participants in the millions.

Grass playfields and grass courts are the most versatile and most utilized activity areas used in any Open Space area or Park. We used to put Tennis Courts into some communities but we would see weeds growing through concrete before we would see any use. Sport Courts are not much different, sometimes a basketball hoop would get used depending on the youth in the community; however, we would soon see the hoops removed as some neighbor to the court did not like the kids playing in late summer evenings. Tot Lots, except maybe swings, are generally a waste and the types of structures placed in these communities are seldom used—again a function of the demographics of the community.

Trails are the most used by all generations of a community then it is the open grass areas and grass “courts” that are versatile enough for multiple uses and provide for activities with multi-generational appeal. The activities we provide for on these grass “courts” can be used by 4-year-old to 84-year-old family members either generationally separate or intermixed family fun. Note one exhibit photos show grandpa, grandma, dad, mom, and kids all playing soccer together. Bocce Ball and Croquet are also excellent multigenerational activities.

The make-up of community dynamics changes, young family homes mature into empty nester homes. A sound Activity Area provides for changing demographics and allows for new activities as peoples interest change. Just some of the Activities that take place on our grass fields and courts are:

#### GAMES AND ACTIVITIES THAT CAN BE PLAYED ON OPEN GRASS AREAS.

Net Sports from Badminton to Volley Ball (Crossnet 4 Square—unique four “team” court. Spike Ball  
Soccer—Biddy Soccer—Family Soccer

Mini Field Hockey

Kickball

Dodgeball

Kick Pool—like pool but on grass with numbered balls and kicking the cue ball to a “pocket”

Crochet—traditional or a “pool table” version as in Kick Pool above

Bocce Ball now becoming popular along with Lawn Bowling

Frisbee—Kan Jam

Tag Games—capture the flag, kick the can, Red Rover

Whiffle Ball

Horseshoes with formal sand pit or Rubber Horseshoe set made for lawns

Cornhole—for some reason, in spite of the name, this has become a popular outdoor activity

Yard Dice Games

Kubb—lawn game combo like horseshoes-lawn bowling-Chess for singles or family play.

Molky—version of “bowling” using a wooden pin to knock over numbered wooden pins to reach a score

Lawn Darts (safety tips)

Untold others



## Stormwater Management Bio-cells Used in Active and Passive Recreation Areas

The following photographs are taken from projects we have designed and were built using Bio-cells as an element of Open Space. Some of these cells have been incorporated into Passive open spaces as a point of “interest” in the landscape. Some cells have their surfaces specifically designed for Active uses, the special surfacing is designed so the engineered soils designed for stormwater management (SWM) are not compacted or have their main functions as a SWM facility compromised. More detail on this active surface element is shown later in the series of photos below showing different examples of Biocell used as Active Recreation, Passive Uses, and just landscape points of interest. SEE ALSO “THE MAKING of our BIO-RETENTION OR BIO-INFILTRATION CELLS.

**Figure 1-Bio-infiltration Cell used for Active Recreation in Center of Community**



**Figure 2-Passive Recreation Landscape Area with Cell as a point of interest in the Landscape**

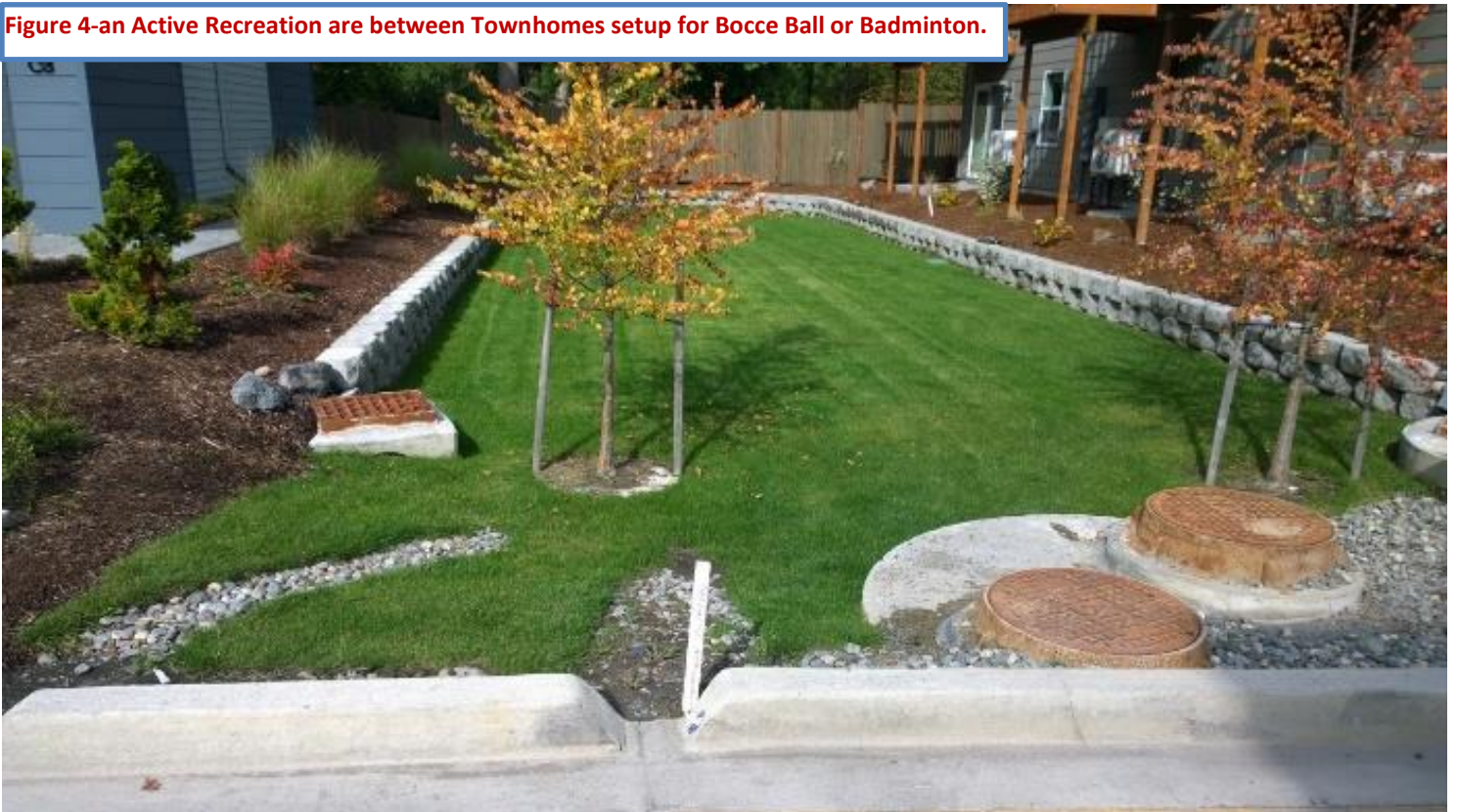




**Figure 3-a continuation of the previous Passive Open Space that here includes the Tot Lot**



**Figure 4-an Active Recreation area between Townhomes setup for Bocce Ball or Badminton.**





**Figure 5-an Active Recreation mix with Passive in one Bio-cell. Here Horseshoes was chosen as the Primary Activity**



**Figure 6-a view of the above from another direction**





**Figure 7-This cell is an Open Space Area providing a point of interest at the entry to the Community**

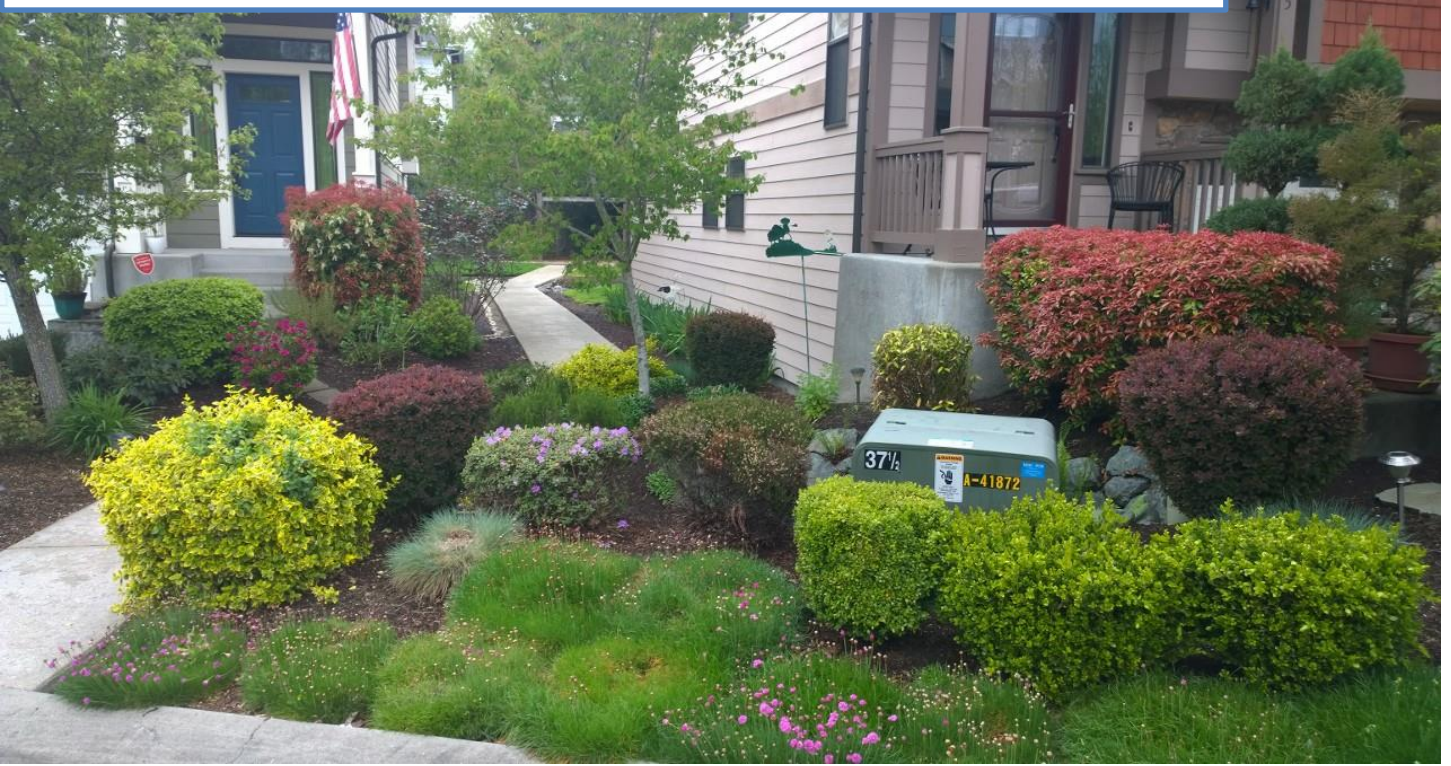


**Figure 8-Another view of the entry landscape above—This landscape serves for SWM also**





**Figure 9-hidden in the landscape here is a bio-cell with utility structures placed strategically within the cells**



**Figure 10-Those are bio-infiltration cells providing Open Space and Landscape Screening**





Figure 11-These cells provide outstanding points of interest for “out the window” views.





**Figure 12-this is one large centralized and connected Bio-Cell that has many features for Active Recreation. We have here, pervious paths, Gazebo, Bench Swings, and arched bridge. The rock pond below has a storage tank beneath that catches stormwater for late irrigation. Birdhouses are numerous and spread out through the open space to attract and provide for wildlife.**



**Figure 13-These individual bio-cells provide points of interest landscape features in front of the homes**





**Figure 14-Additional view of the previous projects with Bio-cells landscaped in front yards.**



**Figure 15-this Biocell is providing SWM, landscape interest, and provide some screen for homes around the cul de sac.**





**Figure 16-This Biocell is providing a point of interest landscape feature and as it matures will provide screening of the side of the house from street views.**



**Figure 17-This shows a Biocell similar to the one above being prepared for SWM and before landscape planting.**





**Figure 17-This is an Active Recreation Biocell being meticulously prepared for lawn sports like soccer and flag football. This “court” will soon be seeded with Micro Clover and can provide play for many of the lawn sports listed at the end of this memo.**



**Figure 18-This is an Active Recreation Biocell prepared as above but now covered with Micro Clover. The Micro Clover has an aggressive and deep root system, is drought resistant, can take periods of inundation, is a Phyto remediator of Hydrocarbons, fixes its own nitrogen, and only grows to 4 inches. If cut only a few times a summer, will close crop at a couple inches high making an ideal surface for any lawn sport or activity.**





**Figure 19-A biocell being prepared for Active Recreational Use. This is one of several in this Mixed Townhome-SFDU Community.**



**Figure 20—this is the finished space shown above—this cell provides a nice lawn area for families to play within this townhome-SFDU Community. Instead of one large recreation space, this community has smaller areas set up in different areas of the community.**

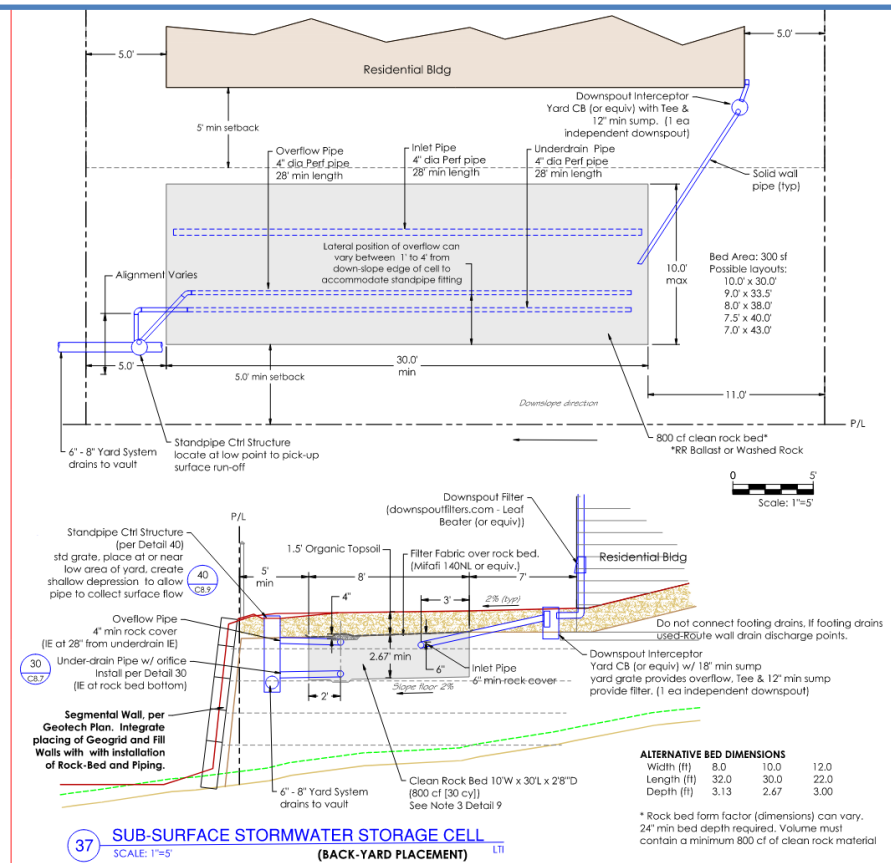




**Figure 21-This is a backyard Recreation Storm Retention System as detailed in the schematic below it. This allows full typical use of the Backyard Private Space so important to these single-family homes. The backyard is fully functional while supporting a roof drain detention system that is twice filtered before being detained in the rock chamber below the turf grass.**



**Figure 22-Schematic drawing of the SWM under the Private Space Backyard photo above**



GAMES AND ACTIVITIES THAT CAN BE PLAYED ON OPEN GRASS AREAS.

**Net Sports** from Badminton to Volley Ball (Crossnet 4 Square—unique four “team” court.

Spike Ball

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Untold others

SEE ALSO “THE MAKING of our BIO-RETENTION OR BIO-INFILTRATION CELLS” as separate but included memo.

## The Making of our Bio-retention or Bio-infiltration Cells

**Prologue:** For several decades now, stormwater management traditionally used fenced open ponds or concrete vaults (detention facilities) as part of the flow control design. The ponds and vaults provided storage of water while restricting outflow to design rates.

Very little pre-treatment of stormwater runoff has been provided to flows entering these facilities. Catch Basins have been the standard means of treatment for stormwater runoff prior to entering a detention facility. If maintained properly, Catch Basins can remove eighty percent of the Total Suspended Solids (TSS), still leaving, at best, twenty percent TSS that typically accumulated in the ponds or vaults. This twenty percent is likely a low number, as historically, the Catch Basins providing this primary treatment were not well maintained and often had their "catch" filled with debris for some periods of time before periodic cleaning would actually happen.

The results of this minimal removal of solids from stormwater runoff is that a lot of solids end up settling out in the pond or vaults requiring their subsequent maintenance. Depending on the situation, it was not uncommon for a vault to accumulate a foot of solids in 5 to 10 years and require periodic maintenance to maintain functionality of the design.

Active maintenance by access and removal of sediments is required to keep these systems operating as designed; typically, tractor trucks and other motorized equipment should be deployed on a consistent schedule to keep these vaults and ponds operating optimally.

The requirements for Active Maintenance of these traditional system have created a "mindset" that any stormwater runoff catchment needs the same maintenance menu regardless of form or design. An alternate design for a detention facility that effectively removes the 'settlings' before reaching the detention "chamber" tends to get reviewed in the same manner as the traditional system that has not taken the same care to remove TSS before reaching the "chamber". The pre-treatment of stormwater being released into a 'vault' is not comparable to the treatment of stormwater going into a properly designed Rock Chamber.

When it comes to maintenance requirements, there is no comparing a Vault with a Rock Chamber

**The Bio-Retention Cell:** The primary difference between the design of the Bio-retention cell with Rock Detention (or infiltration) Chamber and the traditional detention chambers described above is the degree of treatment stormwater runoff receives before it is introduced into the chamber.

While a vault only receives runoff that has a very basic (primary) treatment by purportedly removing TSS by gravity separations in Catch Basins, the runoff going to rock chambers receives enhanced treatment with filtering and not just gravity separation provided in a CB. The design goal for a Bio-retention system with a Rock Chamber is to prevent the need for long-term and predictable maintenance-the goal is to keep the silt and sediment from ever reaching the Rock Chamber.

In most circumstances, there is a Treatment Train (TT) or several sediment removal elements provided to water inletting into a Rock Chamber. By the time treated flows get released into the rock chamber, it is 99% to 100% free of settling solids.

The Treatment Train:



1. As with a vault, the first element in the TT is Catch Basins. These CBs, if maintained properly, will remove around 80% of the larger or heavier solids.
2. Runoff passing through the CBs and Conveyance is discharged to a Biofilter that has several layers of treatment and sediment removal elements:

A. **Vegetated Surface**—the vegetation layer is to provide for uptake of pollutants and will help maintain pore space and infiltration rates of the bio-filter mix. We choose to use a dense groundcover of a Dutch White Clover (Micro Clover). We choose this groundcover as it forms a thick vegetated blanket over the surface of the filter. It has very deep and active rooting which does keep pore spaces open on the surface and into the filter layers. The Clover provides Phyto

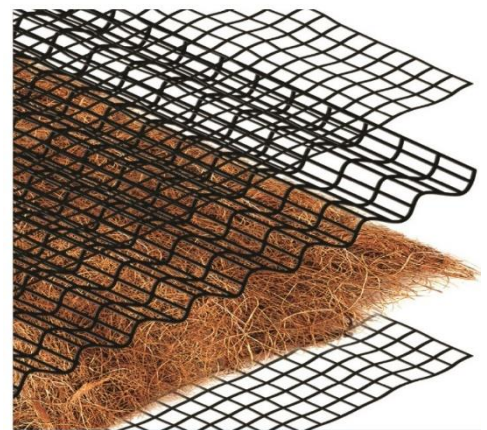


Remediation of Petroleum Hydrocarbons and PCBs. It will not go dormant in the summer, stays green, and can tolerate long periods of drought and some inundation. It fixes Nitrogen, removing the need for adding Chemical Fertilizers to maintain a healthy vegetated layer. The Micro Clover only grows 4 to 6 inches without mowing, it still looks 'kept' if not mowed but once a summer.

B. **Seeding and Impact Layer**—the first filtering layer is the two inches of fine sand and compost mix. This provides a primary filter, a seeding medium for the Clover, and an impact layer for active use. It is primarily a sand filter layer that will not compact and marginalize permeability. Typical mix is 70% fine sand and 30% compost.

C. **Three-Dimensional Turf Reinforcement**—on Bio-cells to be used for recreation, we specify a Vmax 350 or at times a P550 depending on activity level anticipated for the Bio-cell. It is a 3-dimensional matting and fiber matrix material that provides all-out erosion protection, vegetation establishment, and increased bearing capacity for vegetated soils subject to loading. It allows for surface impact while keeping base material from compacting. The Coir Mat provides an additional element of filtration.

VMax<sup>3</sup> C350



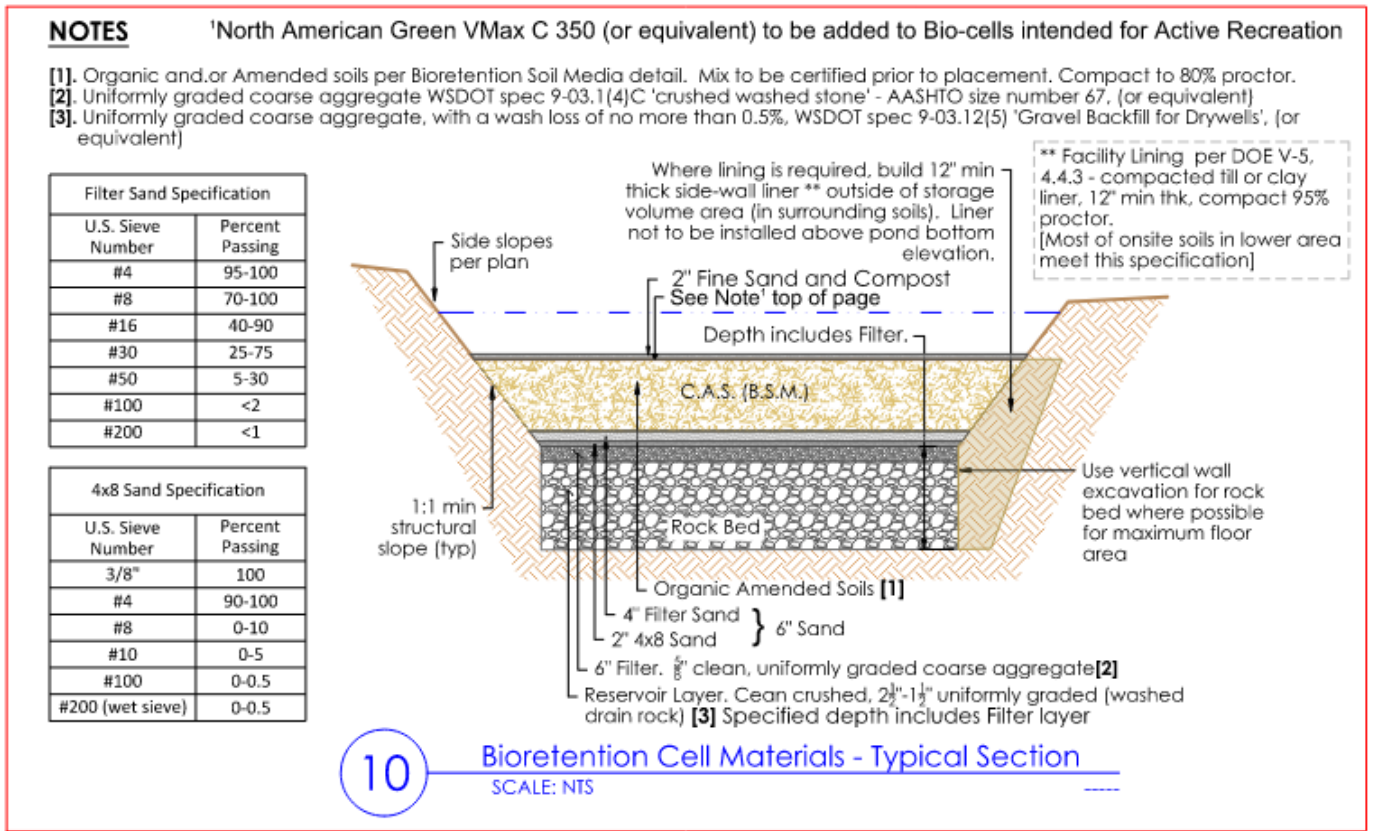
D. **Eighteen Inch Bio-Retention Soils (BSM)**—when prepared per the recommendations of the LID Technical Manual, this is primarily a sand filter with amendments, typically compost, added to remove dissolved pollutants. This eighteen-inch Bioremediation Soil Mix with good sand component has been shown to remove 89 to 99 percent of sediment (based on various test site measurements).

E. **Fine Sand Filter Layer**—The LID Technical Manual or the Stormwater Management Manual typically just specifies the Eighteen inches of BSM as a sediment filter. Our systems have added two-inch sand and compost layer on top of the BSM and in Active Use Areas Turf Reinforcement and Coir Filter. The most significant addition is this fine sand layer at the bottom of the BSM. Specified is 4-inch layer of Filter Sand meeting Mortar Sand ASTM C-33 criteria. Beneath this layer is 2-inch layer of 4 x 8 sand blanket to keep the Fine Sand from migrating into the rock. Below the 4 x 8 layer of sand is a 6-inch layer of 5/8 clean crushed rock (without fines) to also provide a barrier to the fine sands above. These last two layers also provide filtration but it has been shown<sup>1</sup> little to no sediment gets past the C-33 sand filter.

F. **Silt Trap**—the underdrain is held 6 inches off the bottom of the rock chamber and this volume is not modeled in the detention volumes. These 6 inches will allow for accumulation of sediments before detention functions are at all impacted. All calculations for what could be extracted from various

studies indicate it would take 150 years before enough sediment could accumulate that would impact the design functions of the Rock Chamber.

<sup>1</sup> Associated Earth Sciences (AESI) managed and designed a Demonstrative Infiltration system for the Redmond Ridge Project in King County. On this project was a Bio-cell similar to design expressed above, however, this Biocell managed runoff from a 1,000-acre drainage basin. After 22 years of monitoring and reporting, they had only 3 inches of sediment penetration into the Fine Sand layer at the bottom of the BSM. These 3 inches of penetration was at the inlet end of the cell. At the outlet end, there was only one eighth of an inch of sediment in the C-33 sand layer; average sedimentation for the whole cell was around one inch. This is from a 1,000-acre basin.



**To repeat**—detention vaults and ponds rely on basic sediment reduction in Catch Basins along the Conveyance infrastructure. Catch Basins, even when properly maintained, only provide 80% sediment removal and far less when the Catches are not properly maintained. These detention facilities rely on an aggressive maintenance plan to remove silt as it builds up in the facility. The 'detention chambers' with vaults and ponds are a significant part of the sediment removal process. Water quality treatment is only basic.

Biocells, as we have proposed, are designed to keep sediment out of the detention chamber. When properly maintained, the detention chamber will see none to very little of the suspended solids that will settle out into the 'Silt Trap' at the bottom of the rock. Water quality treatment is tertiary and meets DOE Definition of 'enhanced'.

**Maintenance:** this description of Maintenance is only intended to address the significant components of silt buildup in the Closed Detention System or Rock Chamber. Both the Operations and Maintenance Manual and the Snohomish County Drainage Manual addresses the on-going maintenance of the stormwater treatment facilities on any site.

The primary maintenance tasks of the Bio-retention cell are basically landscape maintenance. Keeping the "landscape" in good condition will go a long way in maintaining the functionality of the entire system. Healthy and vibrant clover or vegetation will ensure the entire system functions in perpetuity.



Keeping each basin's landscape and groundcover healthy and not allowing onsite soils in the drainage basin to be exposed to the weather also keeps silt out of the stormwater runoff. A mature and stabilized site will produce little to no sediment from most areas.

Keeping the entire treatment train functioning optimally will also benefit the longevity of the system.

*Catch Basins (CBs):* CBs are the first element in the removal of sediment from runoff. Inspecting CBs for accumulations of silt in the sump should be done annually, cleaning of CBs should be done at the end of every summer in preparation for winter weather or if the sump is more than half full; the Maintenance Manuals do say 60% but ability of the sump to function optimally is having the full sump available. A lot of CBs will not accumulate much sediment or debris and may need vactoring only once every five years or even more.

The Catch Basins do only provide for basic sediment removal; if they are comprised and do not function properly or at maximum efficiency, the Bio-cell filter system will protect the rock gallery. The real shield from sediment migration into the rock chamber is the filtering between the Bio-cell surface and the Rock Chamber itself.

*Bio-cell surface:* maintenance of the bio-cell surface is primarily landscape maintenance. Keeping the ground cover in a healthy condition is a primary task to assure longevity of the system. Landscape Maintenance in these communities are usually provided by a professional landscape company hired by the HOA to provide maintenance to landscape features in common areas throughout the community. Some basic landscape tasks required for the Bio-cell surfaces are:

1. Keep the surface vegetated and healthy. With soils and seeds per design, these cells will be self-perpetuating with minimal basic care.
2. Best to mow clover at least once in the late spring or early summer to keep Micro Clover close-cropped. It will typically stay about 4 inches high if mowed just once a year. If the surface is for Active Recreation, it should probably be mowed monthly. Monitor for healthy ground cover growth.
3. Check for debris or any silt buildup that may accrue at the inlets. Check this at least once in a year in the late Spring. This is the first place any silt will accumulate if there is poor CB maintenance. It is not likely under routine use but if silt does accumulate on the surface, it does need to be removed if visible. If silt should appear, most likely at the cell inlet pipe, it can be simply shoveled off carefully with a flat nosed shovel and overseeded with Micro Clover. It shoveling into the Seeding and Impact layer, just replace with 70/30 fine sand to compost mix before reseeding.
4. Excessive drawdown time might indicate a buildup of silt in the filter layers. See below.

*Bio-cell filter layers:* The multiple filter layers are designed to keep fine sediments out of the Rock Chamber and maintain its detention capacity. The Bio-cell filtering starts at the surface. Maintenance of the surface as described above will go a long way to protect the Rock Chamber. Any real maintenance work in the short term will be in the top 2 inches of the Bio-cell. That surface work is outlined above.

As has been demonstrated with the Redmond Ridge project, after 22 years of continuous testing and monitoring, silt/fines did not penetrate the C-33 sand layer by an average of one inch. This Bio-cell is the treatment and flow-control facility for a 1,000-acre drainage basin. Its deepest penetration was 3 inches near the inlet to the cell. In most of the area away from the inlet, penetration of fines was less than an inch. It should be pointed out, that this system does not have the 2-inch fine sand compost mix on the surface as the systems we design today have; this provides a little extra filtering of fines right at the surface. It would theoretically take 50 years for any meaningful amount of silt to penetrate the C-33 layer into the Rock Chamber. The Rock Chamber also has the 6-inch to a 1-foot sacrifice layer that can fill with silt without compromising the function of stormwater detention chamber.

Depth of silt penetration can be determined by use of a ¾ inch by 36-inch Soil Sampler Probe and inspect the "plug" for silt penetration depths. A small hand operated soil auger will work well also. This may just be a 'once a decade' task. It would be warranted if draw-down time starts to exceed 48 hours.

**Long Term Maintenance of Bio-cell tasks:**

*Annually:* inspect surface of Bio-cell for health of ground cover and maintain landscape. If a “flush of silt” shows a visible layer, shovel it off and restore 2” Seed and Impact Layer; overseed with Micro Clover.

*Ten-year:* Monitor annually as above but every ten years add check sedimentation penetration by taking soil plugs with sampler probe or hand soil auger as discussed above. This soil plug inspection should take place also if there is excessive drawdown time from the surface; drawdown should not exceed 48 hours.

When the sediment penetrates through the C-133 layer and reaches the 4 x 8 sand layer, it would be time to consider replacing the filter blanket layers. If draw-down time in the open cell is exceeding 48 hours, it would certainly be time to revive the filter blanket layers. There are factors that determine this timeline such as silt load in the runoff reaching the Bio-cell and area of basin feeding the cell, but a 40-to-50-year timeline would be expected given the 22-year monitoring efforts on the much larger but similar project described above.

If the cell is not maintained as recommended and the filter blanket is not replaced when that action is called for, silt may infiltrate into the Rock Chamber and will settle out in the designed “dead space” at the bottom of the chamber. If silt is pushed through to the Rock Chamber, it may take another 25 to 50 years to impact the detention volume of the Chamber. The Bio-cell drawdown time would likely become “excessive” before silt was to infiltrate into the Chamber.

It is very unlikely, but the day could come, that the Rock Chamber and all has to be replaced. With fairly minimal maintenance, this could take one hundred years. With no care and no maintenance, maybe 50 years. Restoring the functionality of the system by removing the silt, “washing” or replacing the rock, replacing the filter blanket would be far less costly than the maintenance of a vault and replacing Storm Filters for 50 years or more.

