

Bend Area Mining Site Master Plan Report



2010

Prepared by:



BAUER-FORD RECLAMATION
Division of Landscape Architects & Planners, Inc.

TABLE OF CONTENTS

Acknowledgements	p. 2
Introduction	p. 2
Existing Conditions	p. 3
Inventory and Analysis	p. 4
Design Development	p. 4
Estimated Cost Analysis	p. 5
Conclusion	p. 6
Analysis Maps	
Slope Analysis Map.....	p. 7
Soil Boring Location Analysis Map.....	p. 8
Standard Reclamation Plan (Per Township Ordinance)	
Areas of Non-Compliance.....	p. 9
Rough Grading Plan for remainder of site.....	p. 10
Grading Quantities and Costs for remainder of site.....	p. 11
Topsoil/Seeding Quantities and Costs for remainder of site.....	p. 12
Phasing Plan.....	p. 13
Park Development Reclamation Plan	
Park Master Plan.....	p. 14
Rough Grading Plan.....	p. 15
Reclaimed Slope Sections.....	p. 16
Picnic Shelter Site Plan Details.....	p. 17
Grading Quantities and Costs.....	p. 18
Topsoil/Seeding Quantities and Costs.....	p. 19
Phasing Plan.....	p. 20
Land Acquisition Map.....	p. 21
Alternate Development Options	
Concept 1.....	p. 22
Concept 2.....	p. 23
Concept 3.....	p. 24
Estimated Cost Comparison	P. 25

Acknowledgements

Bauer-Ford Reclamation (BFR) would like to acknowledge the following for their support and contributions to the 2009 Bend Area Mining Site Master Plan Report:

- Ottawa County Parks and Recreation Commission
- Ottawa County Road Commission
- Grand Rapids Gravel Company
- DeWent Gravel Company
- Huizenga Gravel Company

Introduction

The Bend Area mining site is located in Georgetown Township, Ottawa County, MI. The site continues to be mined for sand and gravel. The proposed park site is still owned by multiple property owners including: Huizenga Gravel Company, Nate Boyton, Grand Rapids Gravel Company (GRG), DeWent Gravel and the Ottawa County Road Commission (OCRC). The many stakeholders involved in this project continues to create challenges that will need to be overcome to achieve the vision of a cohesive county park, outlined in the 2000 "Bend Area Master Plan" approved by Georgetown Township. Although the Parks Commission has been successful in acquiring portions of the land from Nate Boyton, negotiations need to continue between the remaining property owners and Ottawa County Parks and Recreation Commission (OCPRC) to achieve the vision outlined in the plan.

Nate Boyton sold portions of his land to the OCPRC in 2008. The north portion lies between the Grand River and the inland lake that Mr. Boyton created. In addition, roughly 40 acres west of 12th Avenue was also sold by Mr. Boyton to the OCPRC. This area was determined to be a regulated wetland by the MDEQ.

The Huizenga land (western parcel) continues to be mined; however, at a very slow pace. Recent conversations with the landowners indicated it could be many years into the future before this land will become available for purchase; although, there was some indication that a portion of the land adjacent to the Grand River might become available sooner, if a deal could be negotiated.

The DeWent property, excluding the wooded wetland forming a long, finger-shaped parcel running northwest from 12th Street, is currently being mined under an agreement with GRG. This wooded wetland was determined to be a regulated wetland, and is therefore protected by the MDEQ. GRG had projected that it would complete mining in 2010 / 2011; until the recession caused them to alter their plans and at present it might be 2012 or 2013 before mining on the DeWent property is complete.

Grand Rapids Gravel Company is also operating on land leased from the Ottawa County Road Commission in order to mine, process and haul material. It is located southwest of the DeWent property in addition to the land they occupy immediately west of the DeWent property. Numerous meetings with GRG were held during this process to discuss how the active mining operation could be used to provide a unique opportunity in creating landscape features that would add to the recreation value of the future park while at the same time allowing for mineral extraction. The proper planning and coordination with GRG could save the Ottawa County Parks and Recreation Commission substantial money and resources in reshaping this area for the creation of the Bend Area Park.

This report update details current conditions of the site (soil borings). It focuses on the DeWent / GRG and OCRC portions of the site. The DeWent / GRG operations are winding down and intentions are to exit and dismantle the operation center when finished. This area is where the more significant park components are proposed to be developed. The report includes an estimated time frame for completion of mining operations and also determines the approximate value of the reclamation. The reclamation program also provides multiple, phased development concepts for a county park in various scenarios based upon the information that has been provided to date. The reclamation program includes guidelines for reclaiming shorelines, placing topsoil and overburden, shaping sub grades for future wetlands and shaping the remaining land and slopes for future park development areas based upon the acquired property.

Existing Conditions

To evaluate the existing conditions of the mining site, BFR examined portions of the site where mining operations have been reported as complete. Chapter 26 of the Georgetown Township ordinance has provisions requiring completed mine sites to have a 3:1 slope on all excavations angling to a body of water, 5:1 slopes for the first 25' underneath the body of water and 4 inches of topsoil spread across the entire site and seeded to establish vegetation for erosion control. BFR performed depth probes (July 2009) in the east lake where mine reclamation activities were supposed to have been completed. This was done by taking depth readings 25' away from the shoreline and calculating the corresponding slope to determine if the 5:1 ordinance requirement was met. It was discovered that multiple areas of reclaimed slope were not in compliance with this ordinance nor was there 4 inches of topsoil across the site and no evidence that seed had been spread to establish vegetation on the bare soils.

BFR is concerned about these conditions especially the slopes' erosion potential due to their steepness and lack of vegetation cover, particularly on the windward side. Another concern regards safety issues related to the development potential of public trails along these shorelines if the park plan is realized. These issues need to be resolved prior to the county taking ownership of this property.

Following the visit to the Bend Area mine sites to evaluate the existing conditions, BFR developed a revised plan for the proposed county park components. It is imperative to update the 2000 master plan because much of the site has changed

due to the location of deposits, spoil site expansion and additional deposit information. The updated plan reviews the new conditions and takes them into consideration relative to reconfiguring components with the future park plan in mind.

Inventory and Analysis

To begin, an updated inventory and analysis of the site was performed. A geotechnical report was commissioned to determine the conditions of the subsoils and also the characteristics of the mineral deposit. This information was used to make general decisions regarding future building sites and road locations. It also defined areas that could continue to be mined with the potential of creating a wetland and habitat area.

Design Development

BFR developed two reclamation scenarios to demonstrate the differences between a “standard reclamation plan” (p. 9-13) and the “proposed park reclamation plan” (p. 14-21).

Standard Reclamation Plan

The Standard Reclamation Plan shows the work that needs to be performed to generate a standard reclaimed site according to Chapter 26 of the Georgetown Township Zoning Ordinance.

The Areas of Non-Compliance (p. 9) shows the existing reclaimed areas not in compliance with the Township’s Zoning Ordinance. These areas will need to be addressed before mining operations cease. The Rough Grading Plan (p. 10) illustrates full excavation of all mineral deposits according to the Township Ordinance without incorporating any park elements or customized land shaping. Based on the anticipated depth of the excavated deposit under the standard reclamation plan, the seasonal fluctuations of the flood plain will cause this excavation to be partially filled with water; and, partially to completely dry during parts of the year. The depth of the water in this new excavation will be dependent on seasonal precipitation and respective flood conditions. The associated grading quantities and costs were calculated for the standard reclamation plan (p. 11) as well as topsoil and seeding quantities (p. 12). The Phasing Plan (p. 13) attempts to forecast future mining and reclamation activities for the site under this plan.

Park Development Reclamation Plan

A revised Park Master Plan was developed reflecting the existing conditions and current mining operations (p. 14) The revised master plan for the park incorporates most of the original components such as: a beach, bath house, boat launch, wetland and habitat areas, earth dams, observation blinds, and portions of the Ottawa County Regional Trail system. The active mining process provides the opportunity to create variable slopes along the banks of the excavation improving access to the wetland and habitat areas and also creating interesting topography for hiking along the wetland (p.16-17). The Park Master Plan also incorporates earth dams at the intersections of the wetland areas and the main lake to control water levels in these future wetland areas (p. 14). The Rough Grading Plan illustrates the excavation activities needed to

carry out these activities (p. 15). The associated quantities and costs for grading, topsoil and seeding in order to reclaim the site for park use were calculated and illustrated (p. 18-19). The Phasing Plan (p. 20) attempts to forecast future mining and reclamation activities for the site under this plan. In order to carry out these all of these phases, however, land acquisitions will need to take place. The Land Acquisition Map (p. 21) anticipates these acquisitions in the order shown.

The updated park plan provides multiple development options based upon different land acquisition possibilities. In concepts 1-3 we assume the acquisition of the GRG and DeWent properties by the Ottawa County Parks and Recreation Commission as envisioned in the 2000 plan. Discussions with the Ottawa County Road Commission have given the impression that it will be many years before the OCRC is willing to part with their land due to the size of the deposit and the relatively small extractions needed by the road commission and therefore OCPRC is reacting to that realization with these scenarios.

Concept 1 - shows a potential park layout if the Ottawa County Road Commission does not agree to use the majority of their land as part of the proposed park master plan in a timely fashion or not at all (p. 22). A small access easement is proposed by OCPRC to gain entry to the park site from the existing entry point off the east end of Fillmore Street. The road network extends across the entire southern edge of GRG land to access the Ottawa County park land to the east where a small parking lot is proposed.

Concept 2 - is another option if Ottawa County Road Commission does not agree to use the majority of their land as part of the proposed park plan (p. 23). This plan also calls for OCPRC to acquire a small access easement for entry off of the east end of Fillmore Street. However, the road network only services the proposed beach area and does not continue to the park land currently owned by OCPRC to the east adjacent to 12th Avenue. This property would be accessible through separate walking trails, the regional trail system, and from the small parking lot proposed off of 12th Avenue.

Concept 3 - proposes a 200' easement along the north and east edges of the Ottawa County Road Commission property for the development of a road to service the OCPRC property (p. 24). The 200' easement is of a size to help mitigate the mining operations and buffer park uses. This plan also routes the Ottawa County Regional Trail through this area which provides ample space to construct a trail system and establish vegetation.

Estimated Cost Analysis

Since GRG will complete their mining operations within the next 2-3 years and because most of the recreation components of the park are planned for the area owned by DeWent / GRG and the OCRC, we focused much of our efforts within this area. The cost estimates for each of the reclamation plans were divided between the GRG property and the OCRC property respectively. The prices for these estimates come directly from the GRG, which appear to be considerably less when compared with our estimated prices. (p. 25)

Comparing the Standard Reclamation Plan estimates with the Park Development Reclamation Plan estimates, it would be approximately twice as expensive for both GRG and OCRC to reclaim the site as a county park than it would be for them to excavate the site to its full mining potential and then reclaimed according to the Township Ordinance.

Page 25 of this report compares these estimates with an estimate for the OCPRC to reclaim the site as a county park after the GRG and OCRC mine the site to its full potential and then reclaim it according to the Township Ordinance. The prices for the PCPRC reclaimed site estimate were derived our estimated prices and are higher than the prices received from GRG. This comparison shows a cost savings for the County if they are able to retain GRG to reclaim the site as a county park.

Conclusion

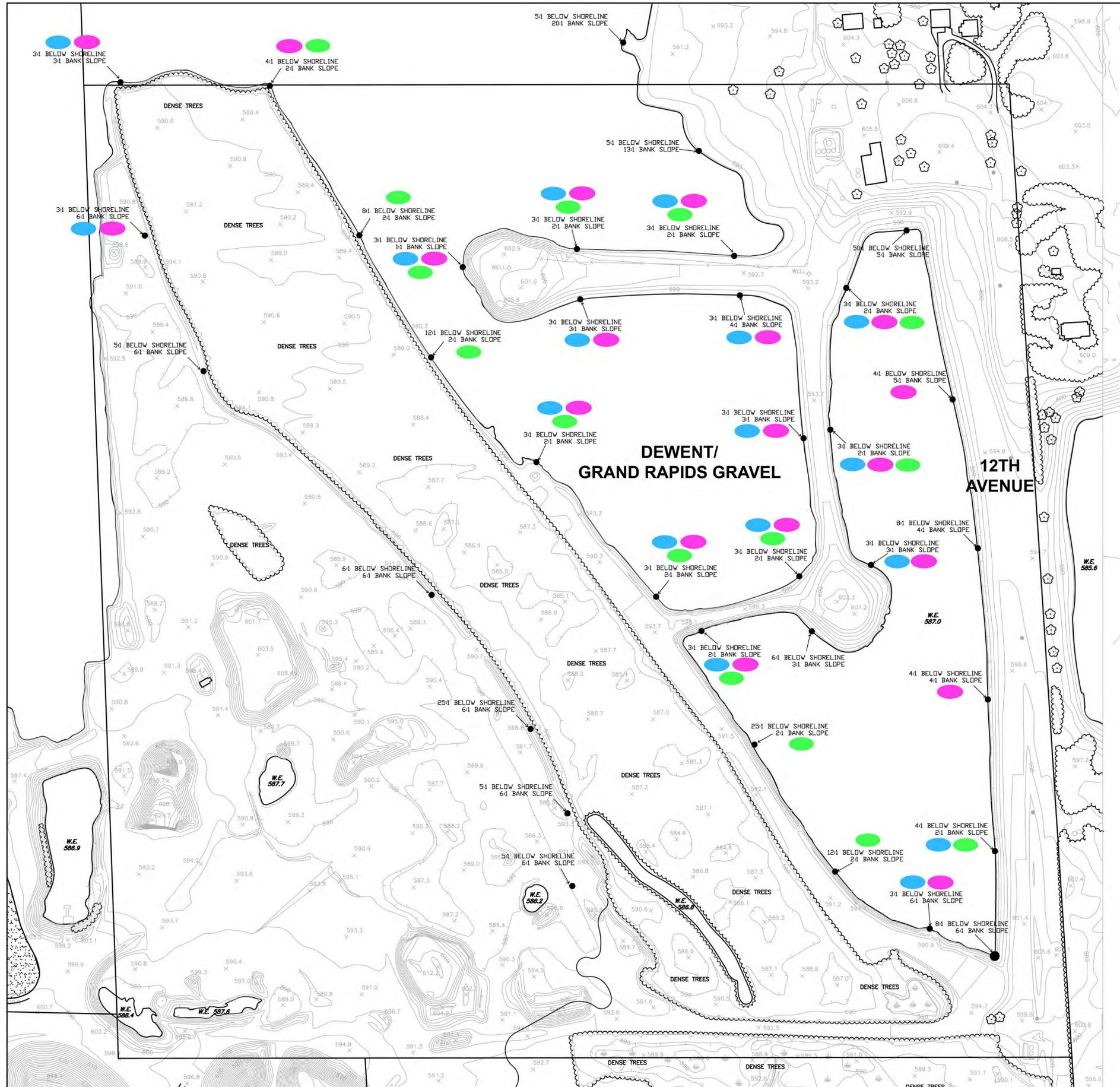
The development of the updated Bend Area Mining Site Master Plan was an effort to reflect changes relating to the mining operations and land ownership that has occurred over the past decade. The adoption of this end use plan by all land owners involved is another important step in moving forward in accomplishing the long-term goal of developing a cohesive county park. More land acquisitions are needed to implement this plan, especially the acquisition of the DeWent/Grand Rapids Gravel Company property due to their plans to complete mining activity and begin the exit strategy. This acquisition should be a high priority within the next year to realize the significant park components of this future park site.

The other high priority is mine reclamation of the site. It is important that all existing non-active areas of the mine site be reclaimed immediately to ensure proper erosion control. At a minimum, this should be done in accordance with the Georgetown Township Ordinance. It is recommended, however, that OCPRC enter into an agreement with GRG and OCRC to allow GRG to complete all reclamation activities according to this updated master plan for future park use. It is also recommended that OCPRC set desired grades according the updated master plan in order for GRG to begin these reclamation activities as soon as possible.

It is further concluded that the existing reclaimed areas of the mine site are not in compliance with the Georgetown Township Ordinance. This must be rectified immediately or consequences will be imposed upon GRG either during the final land sale or in another monetary form.

Analysis Maps

SLOPE ANALYSIS MAP



LEGEND

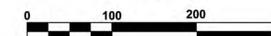
ABOVE WATER LINE

 DOES NOT MEET ORDINANCE OR 2000 PLAN (3:1)

BELOW WATER LINE

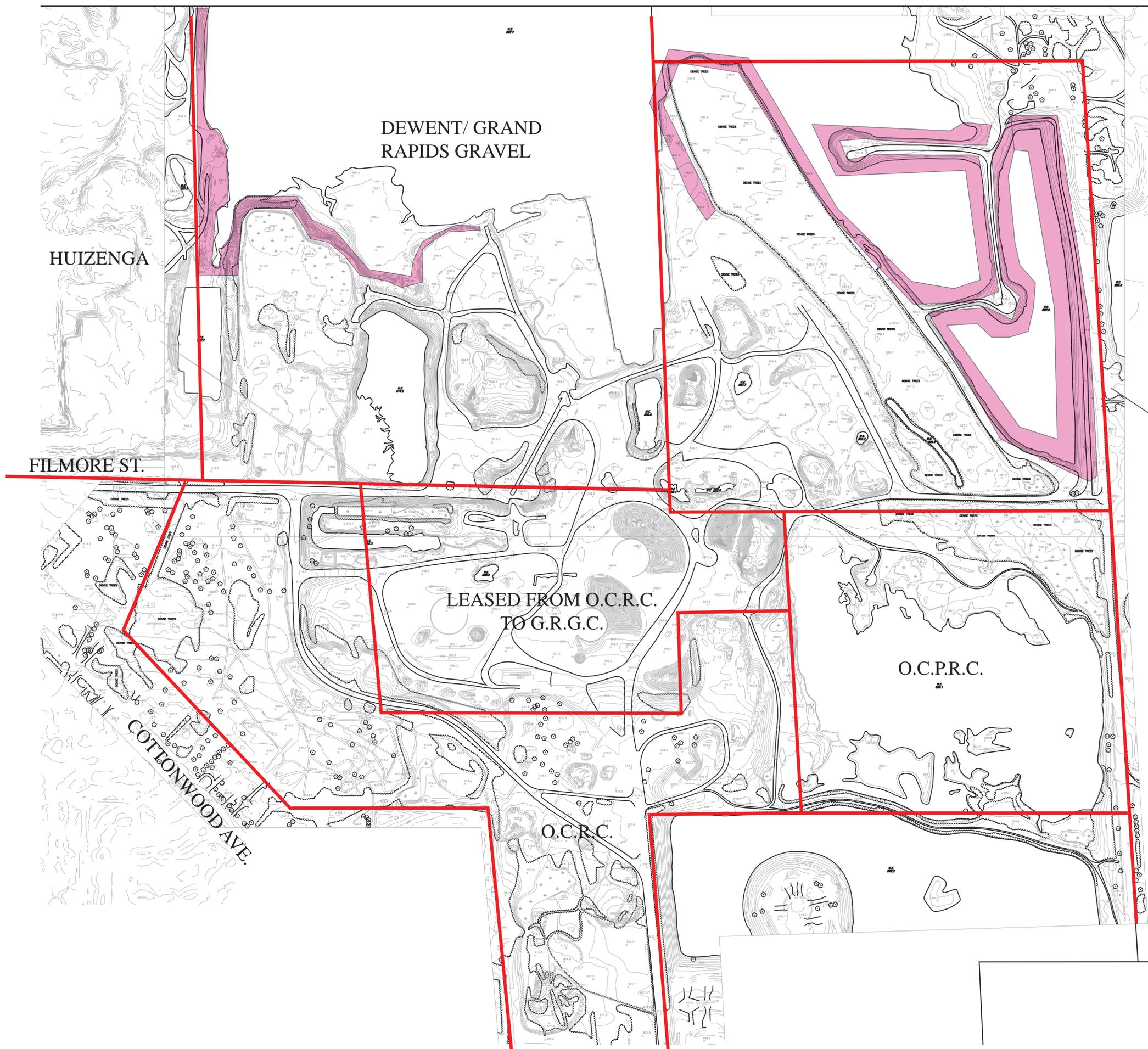
 DOES NOT MEET 2000 PLAN (3.5:1)

 DOES NOT MEET ORDINANCE (5:1)





Standard Reclamation Plan
(Per Township Ordinance)



LEGEND

- Property Lines
- Slopes exceed Ordinance max.

Grading Quantities and Costs

Property Owner	Above NWL (cy)	Below NWL (cy)	Costs
Grand Rapids Gravel Company	8,527	5,968	\$25,323.30

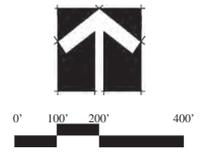
Above NWL = \$1.50/cy
Below NWL = \$2.10/cy

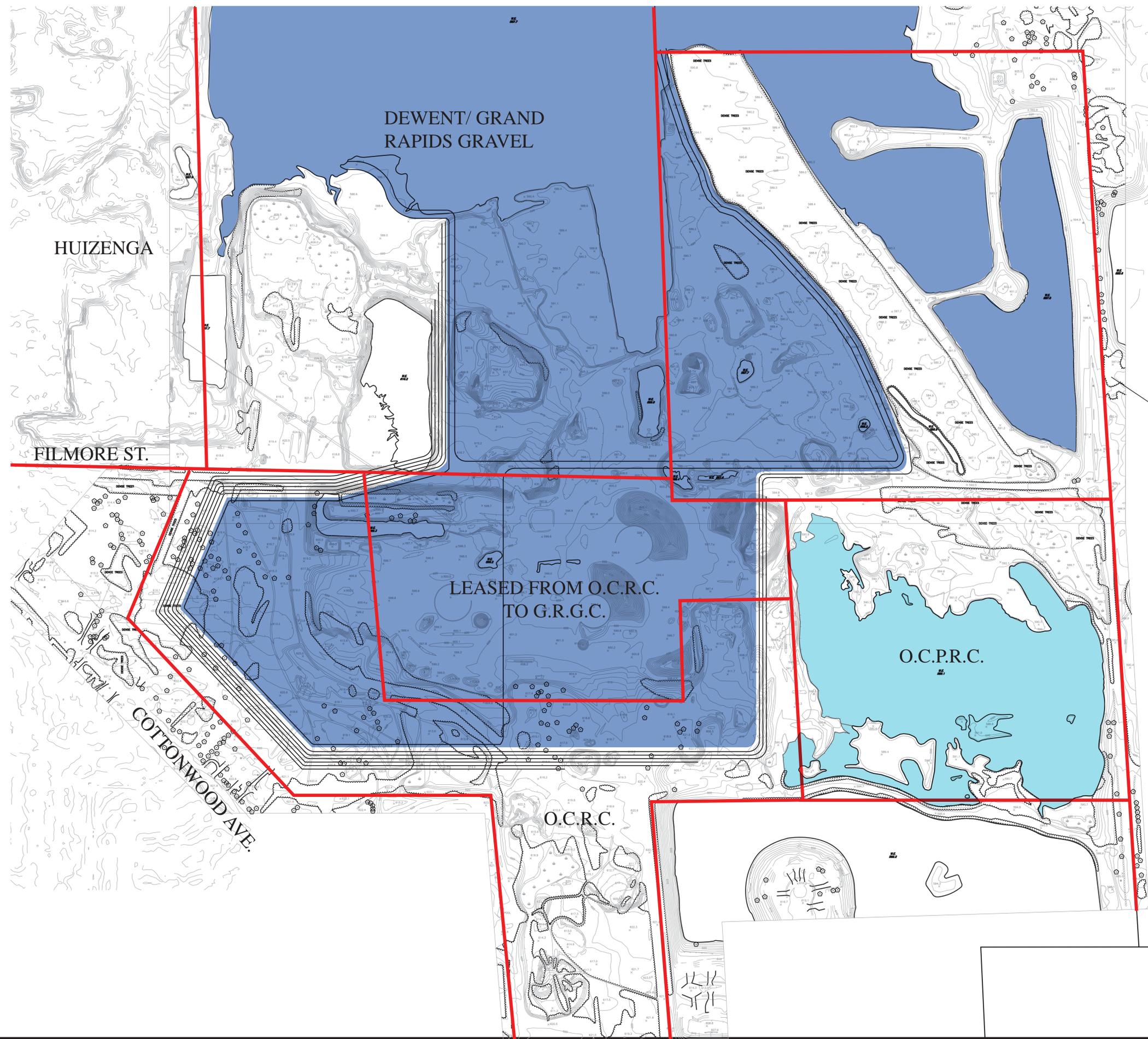
Topsoil and Seeding Quantities and Costs

Property Owner	Topsoil @ 4" depth (cy)	Seeding (acres)	Costs
Grand Rapids Gravel Company	9,490	17	\$20,971.50

Topsoil = \$1.35/cy
Seeding = \$480.00/acre

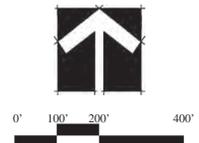
12TH AVENUE

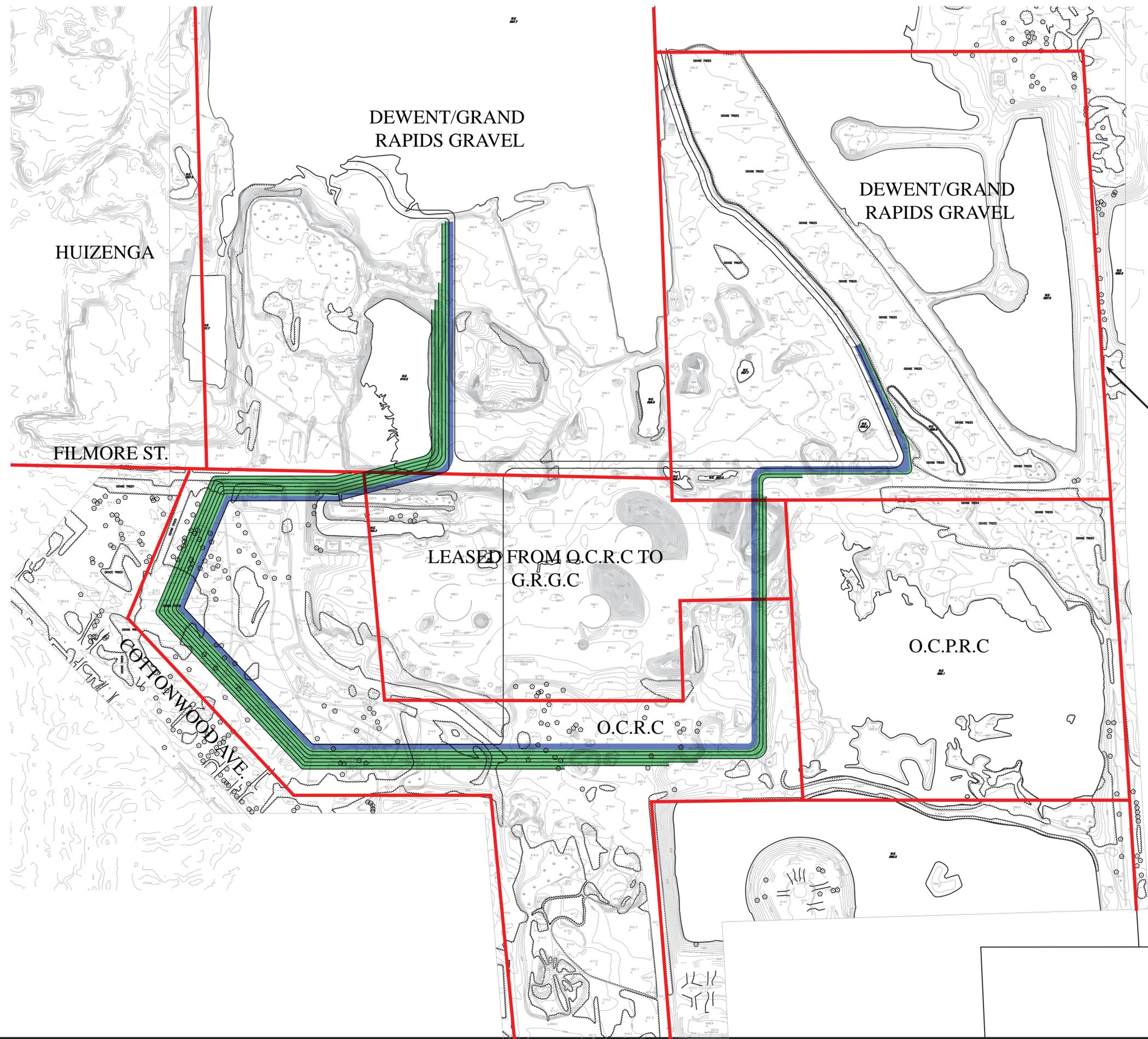




LEGEND

- Property Lines
- Deep Water/Excavation
- Shallow Water/Wetland





LEGEND

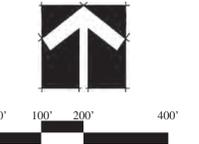
- Property Lines
- Grading Above Normal Water Line
- Grading Below Normal Water Line

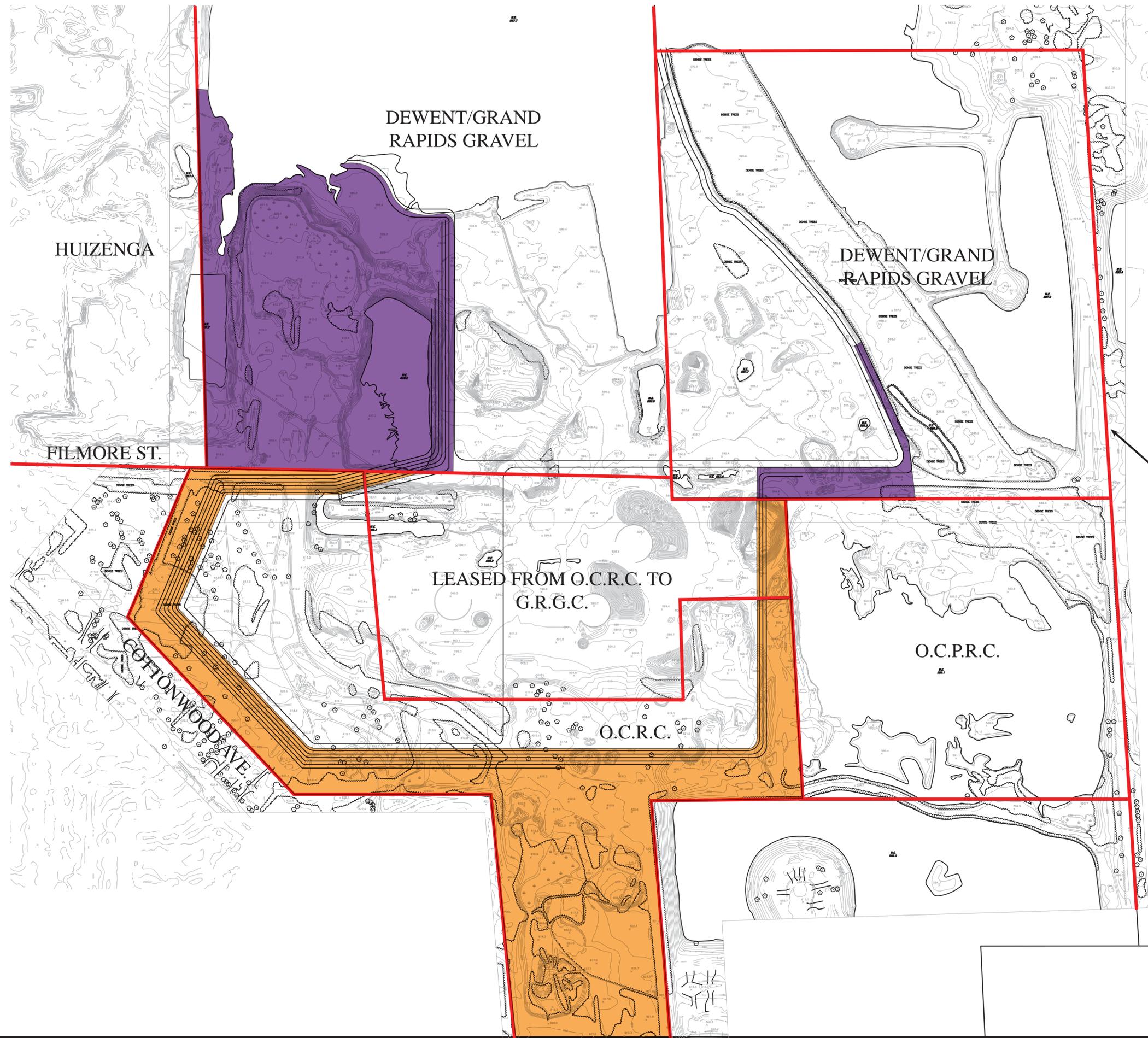
Grading Quantities and Costs

Property Owner	Above NWL (cy)	Below NWL (cy)	Costs
Grand Rapids Gravel Company	4,819	3,430	\$14,430.00
Ottawa County Road Commission	20,471	7,211	\$45,849.00

Above NWL = \$1.50/cy
Below NWL = \$2.10/cy

12TH AVENUE





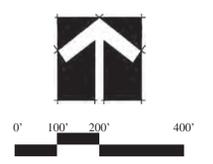
LEGEND

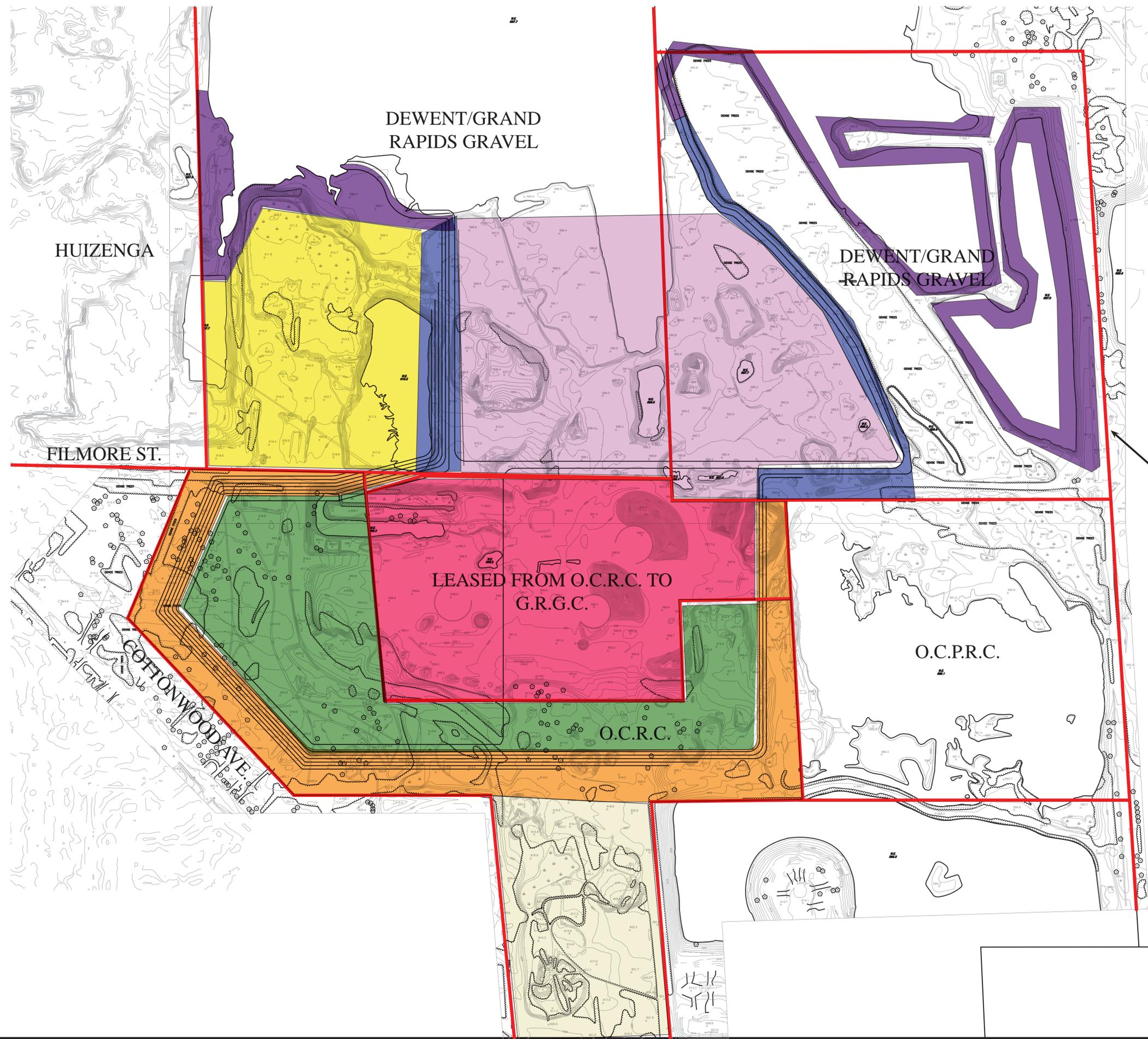
- Property Lines
- Grand Rapids Gravel Company Topsoil and Seeding Area
- Ottawa County Road Commission Topsoil and Seeding Area

Topsoil and Seeding Quantities and Costs

Property Owner	Topsoil @ 4" depth (cy)	Seeding (acres)	Costs
Grand Rapids Gravel Company	17,628	33	\$39,638.00
Ottawa County Road Commission	24,457	46	\$55,097.00

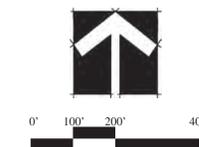
Topsoil = \$1.35/cy
Seeding = \$480.00/acre





LEGEND

-  Property Lines
-  PHASE 1 - FIX NON-COMPLIANCE RECLAMATION
-  PHASE 2 - MINE EXCAVATION
-  PHASE 3 - SHORELINE RECLAMATION
-  PHASE 4 - MINE EXCAVATION
-  PHASE 5 - MINE EXCAVATION
-  PHASE 6 - SHORELINE RECLAMATION
-  PHASE 7 - UPLAND RECLAMATION
-  PHASE 8 - UPLAND RECLAMATION



Park Development Reclamation Plan



LEGEND

- — — — Ottawa County Trail Connection
- - - - - Interior Trail System
- Blue Trail Routes
- ▭ Wetland
- ▭ Core Wetland Habitat
- ▭ Open Water
- ▭ Interpretive Center
- ▭ Picnic Areas
- ▭ Active Recreation Area
- ▭ Beach Area/Amenities
- ▭ Vehicular Circulation
- ★ Wildlife Observation Platforms
- ▣ Trail Crossing

FILMORE ST.

COTTONWOOD AVE.

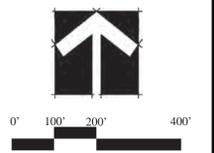
12TH AVENUE

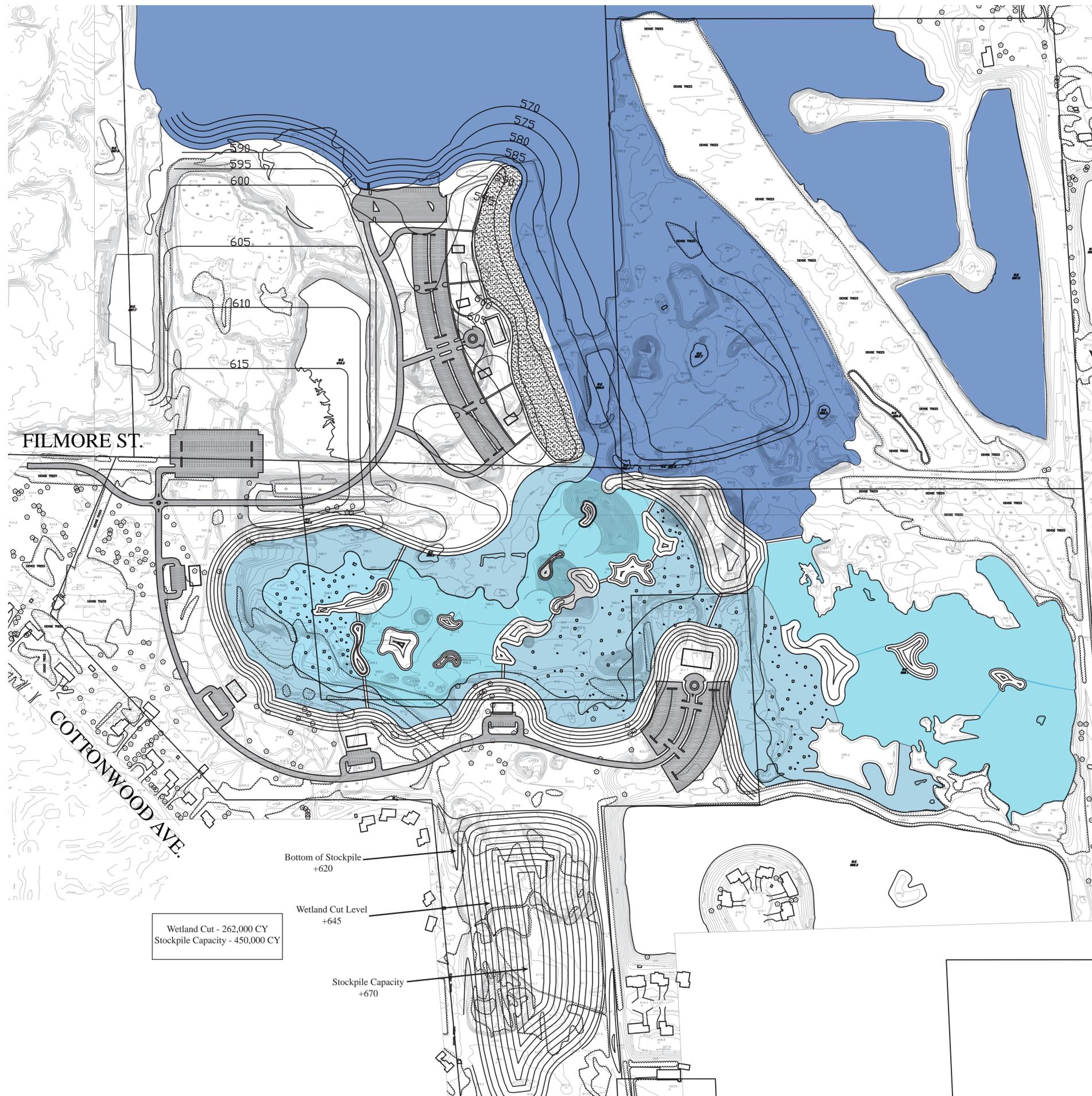
Bottom of Stockpile
+620

Wetland Cut Level
+645

Stockpile Capacity
+670

Wetland Cut - 262,000 CY
Stockpile Capacity - 450,000 CY





LEGEND

- Wetland
- Core Wetland Habitat
- Open Water

FILMORE ST

COTTONWOOD AVE.

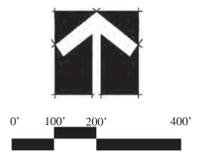
12TH AVENUE

Bottom of Stockpile
+620

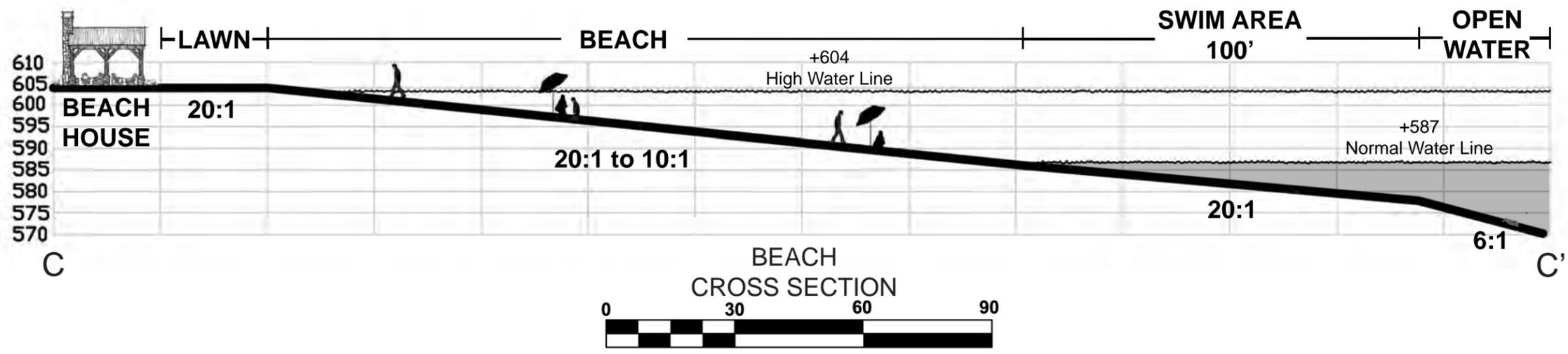
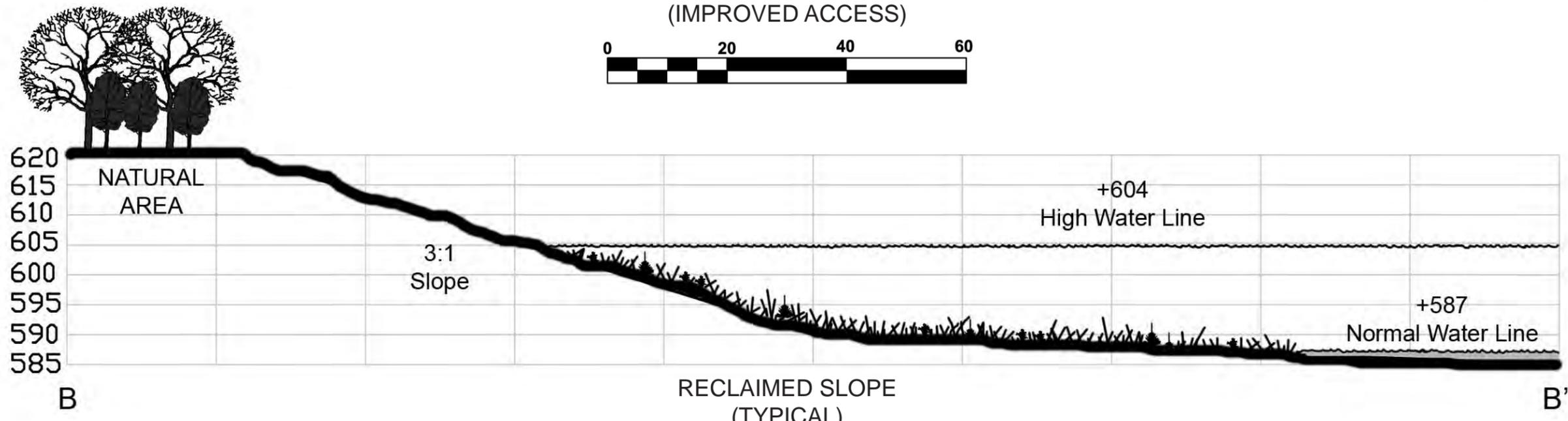
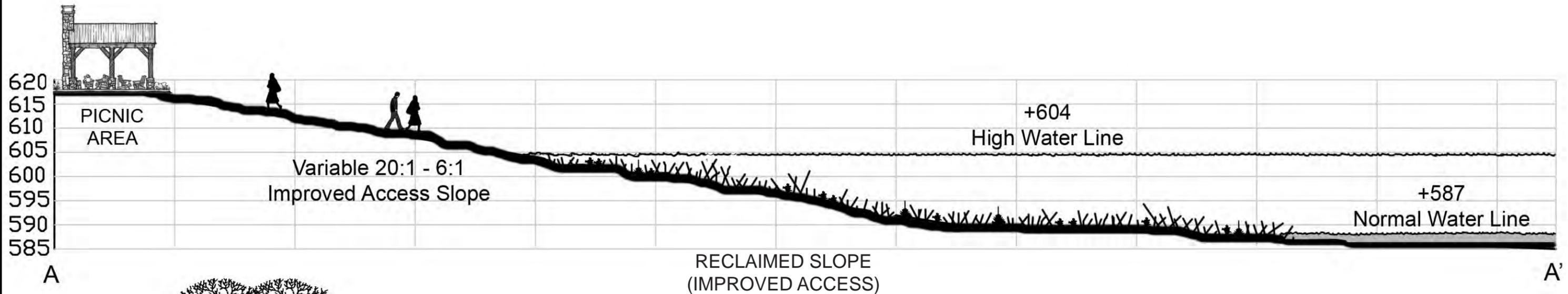
Wetland Cut Level
+645

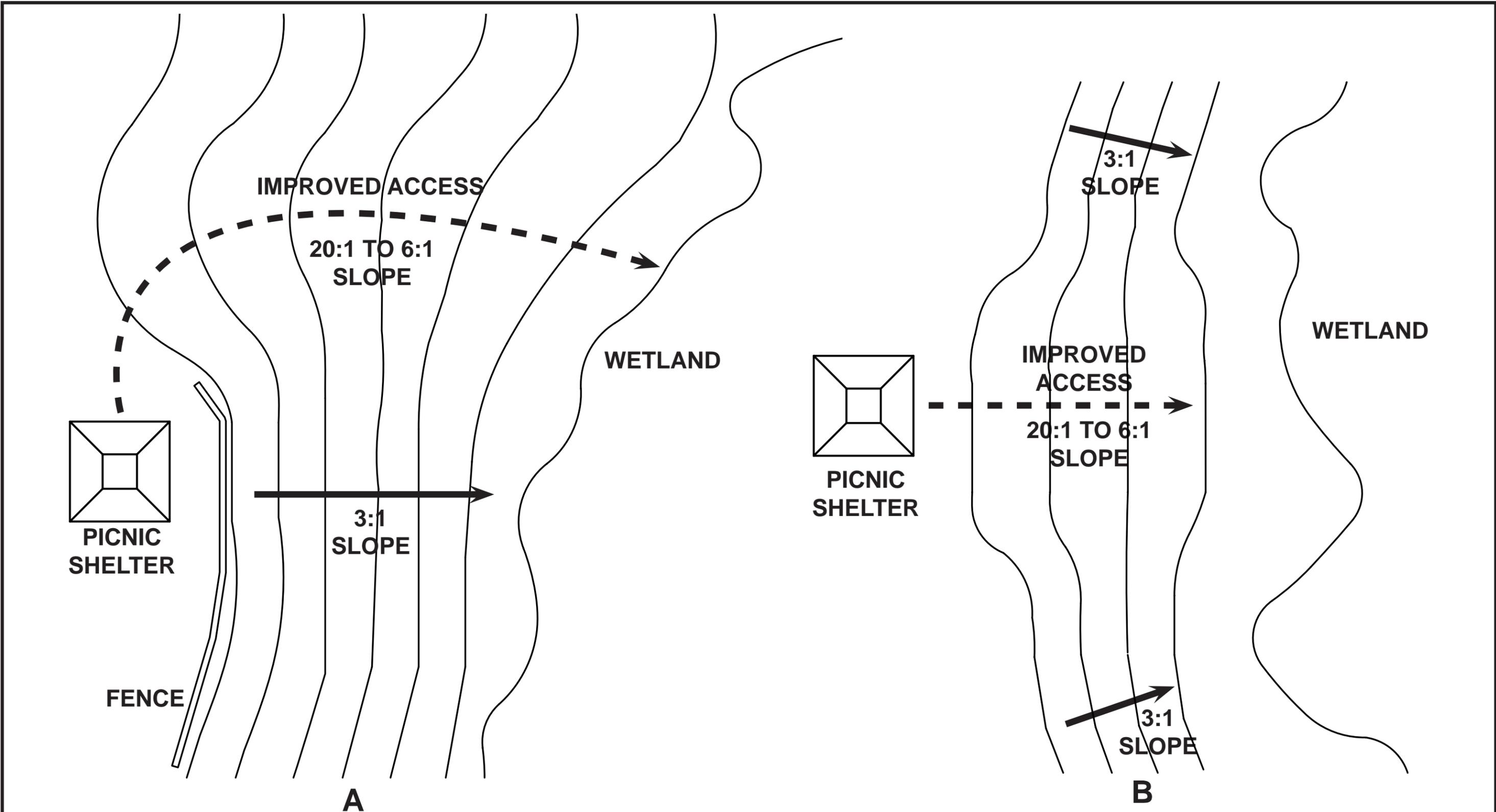
Stockpile Capacity
+670

Wetland Cut - 262,000 CY
Stockpile Capacity - 450,000 CY



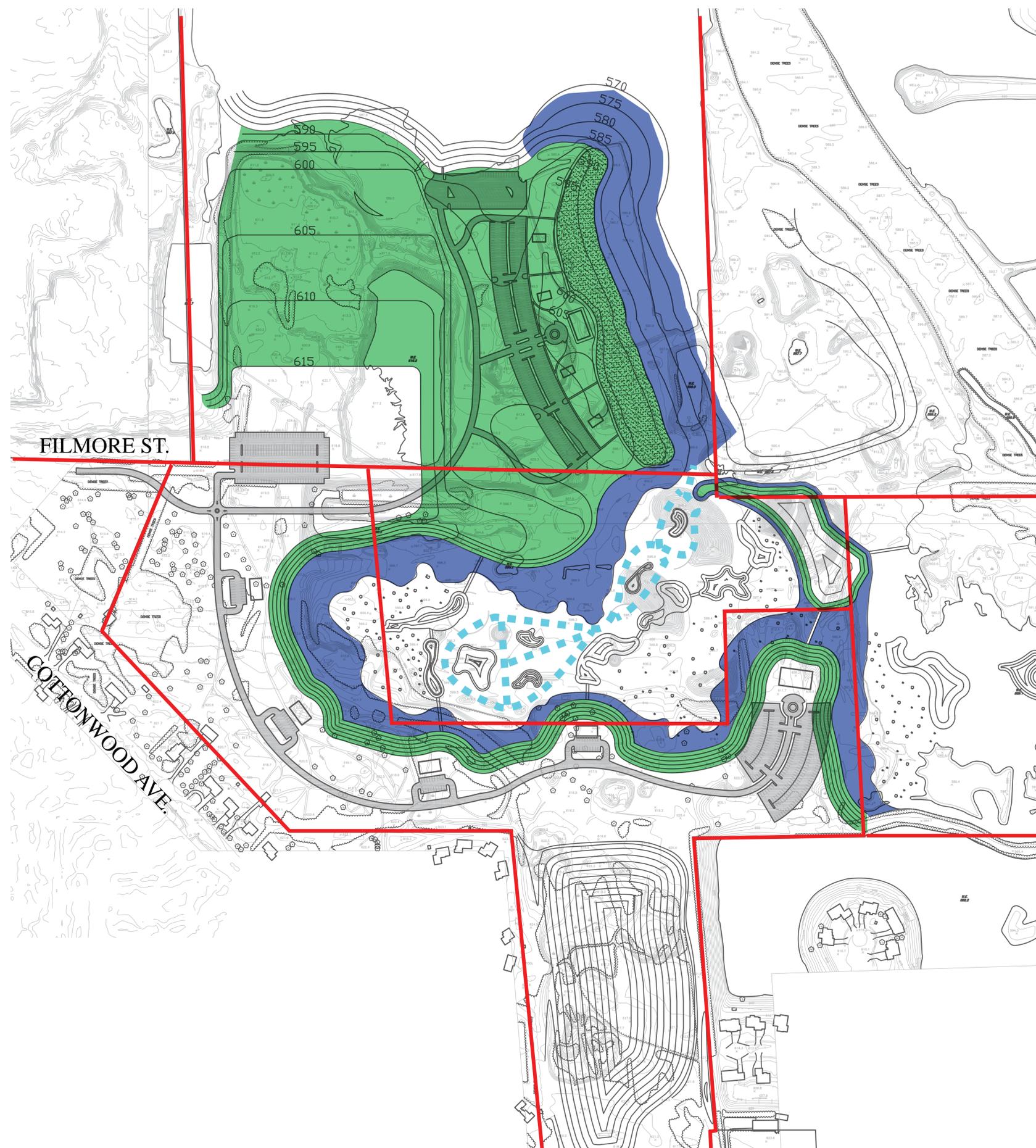
RECLAIMED SLOPE SECTIONS





PICNIC SHELTER SITE PLAN DETAILS





LEGEND

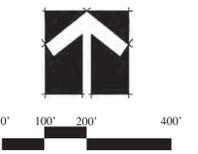
- Property Lines
- - - Blue Trail Dredging
- Grading Above Normal Water Line
- Grading Below Normal Water Line

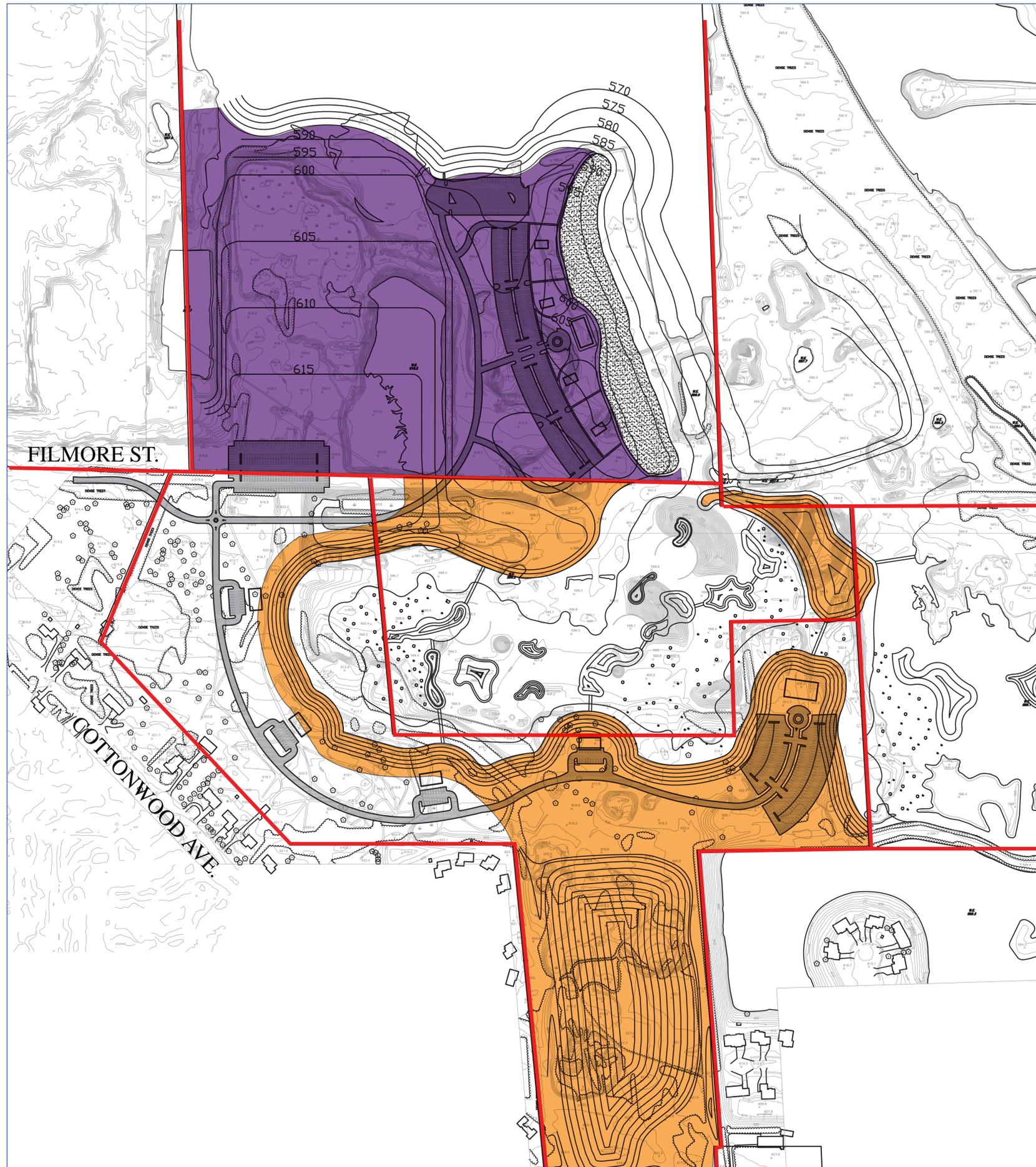
Grading Quantities and Costs

Property Owner	Above NWL (cy)	Below NWL (cy)	Costs
Grand Rapids Gravel Company	32,167	5,751	\$60,327.00
Ottawa County Road Commission	31,592	30,880	\$112,236.00

Above NWL = \$1.50/cy
Below NWL = \$2.10/cy

Ottawa County Road Commission
"Blue Trail" Dredging Costs - \$37,068 (\$6.00 CY)





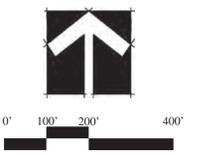
LEGEND

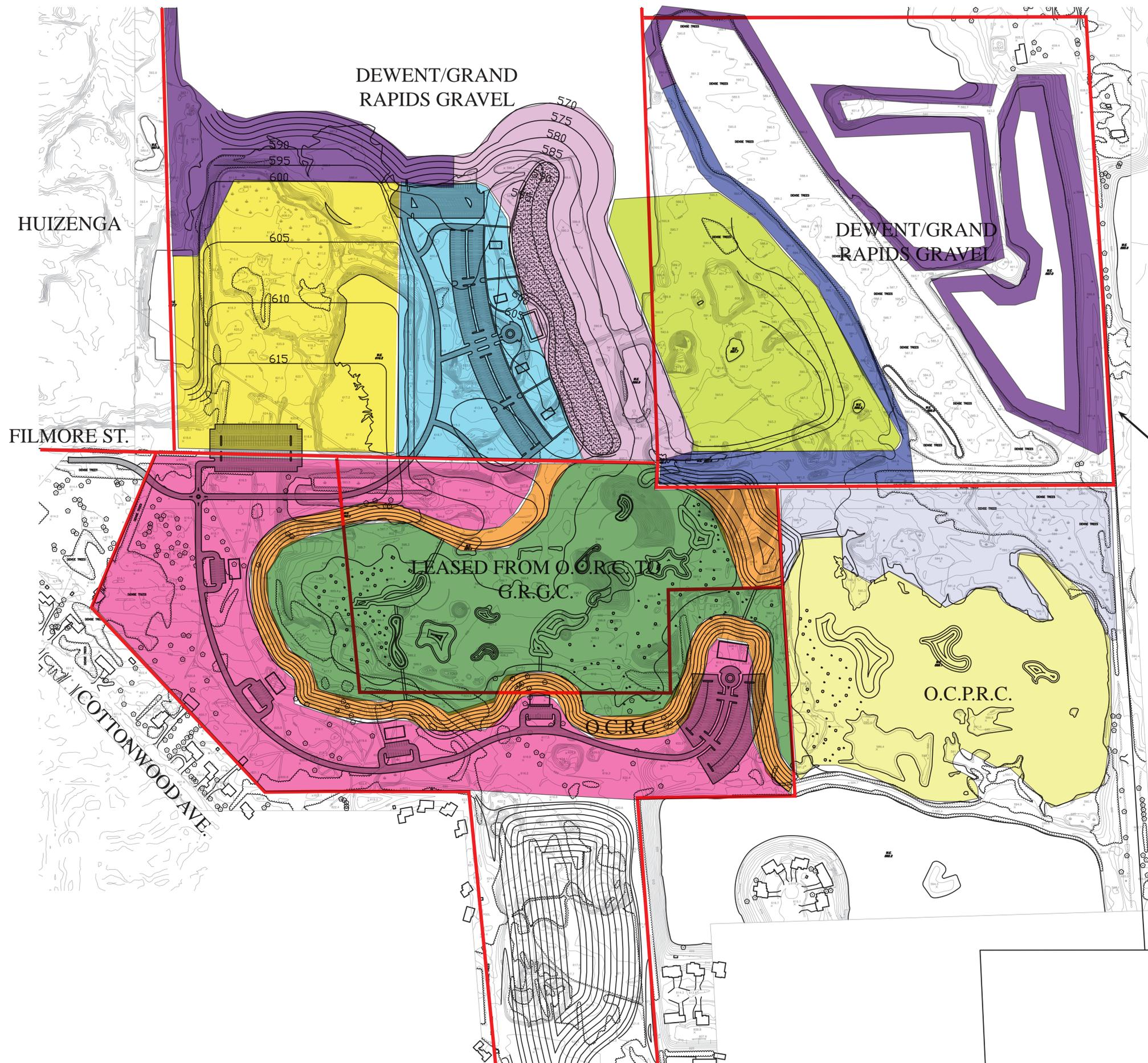
-  Property Lines
-  Grand Rapids Gravel Company Topsoil and Seeding Area
-  Ottawa County Road Commission Topsoil and Seeding Area

Topsoil and Seeding Quantities and Costs

Property Owner	Topsoil @ 4" depth (cy)	Seeding (acres)	Costs
Grand Rapids Gravel Company	25,686	48	\$57,716.00
Ottawa County Road Commission	26,784	50	\$60,158.00

Topsoil = \$1.35/cy
Seeding = \$480.00/acre

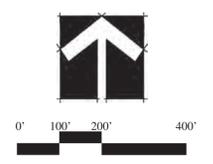




LEGEND

-  Property Lines
-  PHASE 1 - FIX NON-COMPLIANCE RECLAMATION
-  PHASE 2 - MINE EXCAVATION
-  PHASE 3 - SHORELINE RECLAMATION
-  PHASE 4 - BEACH GRADING AND SHAPING
-  PHASE 5 - UPLAND RECLAMATION FOR BEACH DEVELOPMENT
-  PHASE 6 - UPLAND RECLAMATION FOR ACTIVE RECREATION
-  PHASE 7 - WETLAND DEVELOPMENT
-  PHASE 8 - UPLAND RECLAMATION
-  PHASE 9 - MINE EXCAVATION AND WETLAND DEVELOPMENT
-  PHASE 10 - SHORELINE RECLAMATION
-  PHASE 11 - UPLAND RECLAMATION

12TH AVENUE

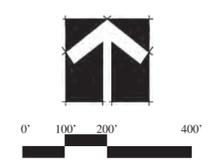




LEGEND

- Property Lines
- Phase 1 - O.C.P.R.C.
- Phase 2 - Dewent/G.R.G.
- Phase 3 - O.C.R.C.
- Phase 4 - Huizenga

12TH AVENUE



Alternate Development Options



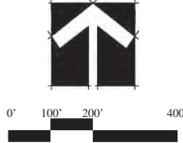
LEGEND

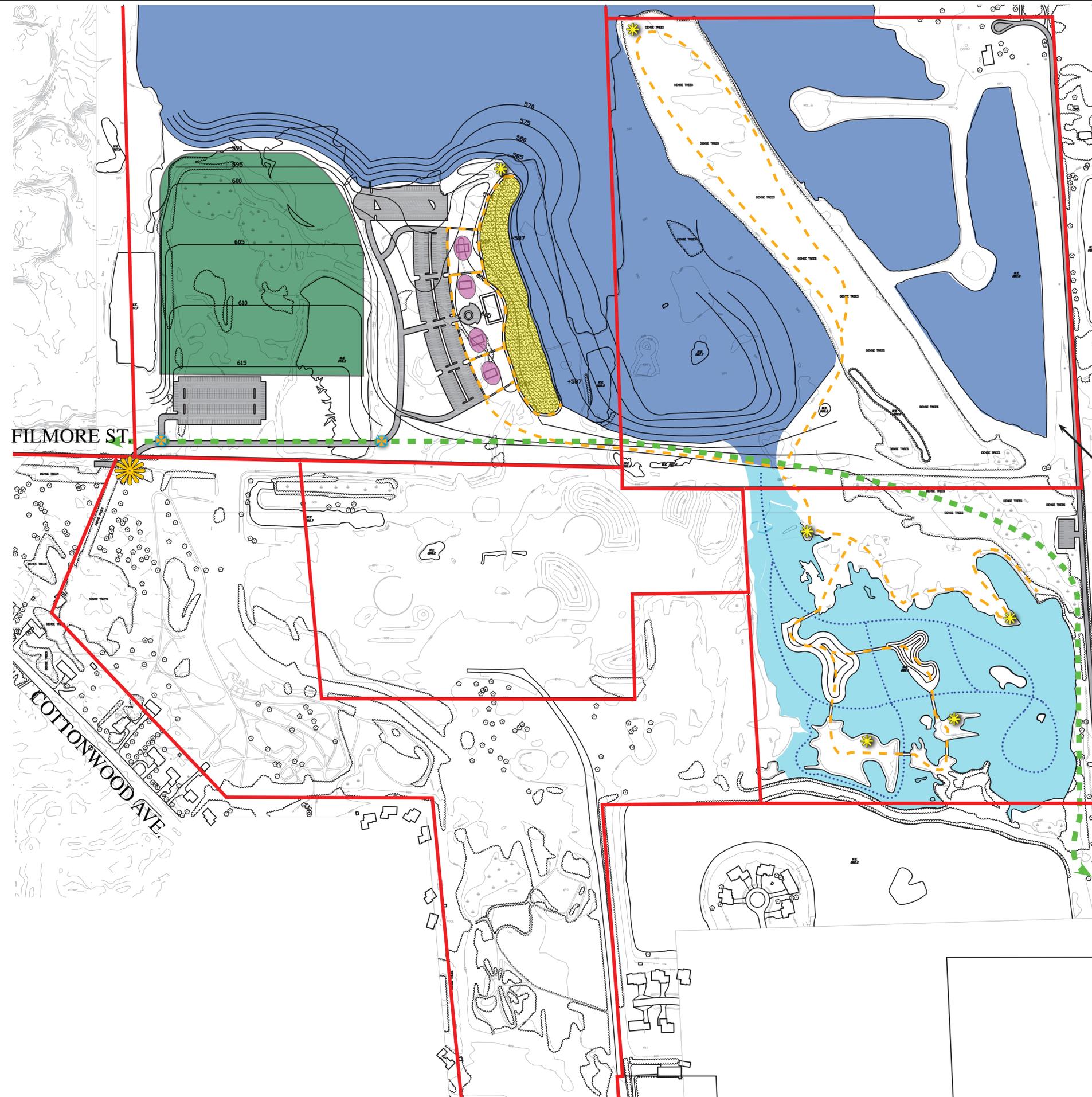
- Ottawa County Trail Connection
- Interior Trail System
- Blue Trail Routes
- Property Lines
- Wetland
- Open Water
- Picnic Areas
- Active Recreation Area
- Beach Area/Amenities
- Vehicular Circulation
- Proposed Access Easement
- Wildlife Observation Platforms
- Trail Crossing

FILMORE ST.

COTTONWOOD AVE.

12TH AVENUE

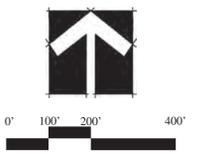




LEGEND

- Ottawa County Trail Connection
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- Blue Trail Routes
- Property Lines
- Wetland
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- Vehicular Circulation
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12TH AVENUE





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- Trail Crossing

Standard Reclamation Plan

GRG Prices:

Grading Quantities and Costs

Property Owner	Above NWL (cy)	Below NWL (cy)	Costs
Grand Rapids Gravel Company	4,819	3,430	\$14,430.00
Ottawa County Road Commission	20,471	7,211	\$45,849.00

Above NWL = \$1.50/cy
Below NWL = \$2.10/cy

Topsoil and Seeding Quantities and Costs

Property Owner	Topsoil @ 4" depth (cy)	Seeding (acres)	Costs
Grand Rapids Gravel Company	17,628	33	\$39,638.00
Ottawa County Road Commission	24,457	46	\$55,097.00

Topsoil = \$1.35/cy
Seeding = \$480.00/acre

BFR Estimated Prices:

Grading Quantities and Costs

Property Owner	Above NWL (cy)	Below NWL (cy)	Costs
Grand Rapids Gravel Company	4,819	3,430	\$18,560.25
Ottawa County Road Commission	20,471	7,211	\$62,284.50

Above NWL = \$2.25/cy
Below NWL = \$2.25/cy

Topsoil and Seeding Quantities and Costs

Property Owner	Topsoil @ 4" depth (cy)	Seeding (acres)	Costs
Grand Rapids Gravel Company	17,628	33	\$64,413.00
Ottawa County Road Commission	24,457	46	\$89,528.25

Topsoil = \$2.25/cy
Seeding = \$750.00/acre

Park Reclamation Plan

GRG Prices:

Grading Quantities and Costs

Property Owner	Above NWL (cy)	Below NWL (cy)	Costs
Grand Rapids Gravel Company	32,167	5,751	\$60,327.00
Ottawa County Road Commission	31,592	30,880	\$112,236.00

Above NWL = \$1.50/cy
Below NWL = \$2.10/cy

Topsoil and Seeding Quantities and Costs

Property Owner	Topsoil @ 4" depth (cy)	Seeding (acres)	Costs
Grand Rapids Gravel Company	25,686	48	\$57,716.00
Ottawa County Road Commission	26,784	50	\$60,158.00

Topsoil = \$1.35/cy
Seeding = \$480.00/acre

BFR Estimated Prices:

Grading Quantities and Costs

Property Owner	Above NWL (cy)	Below NWL (cy)	Costs
Grand Rapids Gravel Company	32,167	5,751	\$85,315.50
Ottawa County Road Commission	31,592	30,880	\$140,562.00

Above NWL = \$2.25/cy
Below NWL = \$2.25/cy

Topsoil and Seeding Quantities and Costs

Property Owner	Topsoil @ 4" depth (cy)	Seeding (acres)	Costs
Grand Rapids Gravel Company	25,686	48	\$93,793.50
Ottawa County Road Commission	26,784	50	\$97,764.00

Topsoil = \$2.25/cy
Seeding = \$750.00/acre