



PLANNING COMMISSION MEETING STAFF REPORT

DATE OF MEETING: December 10, 2019
NAME OF PROJECT: Watts Remund Farms
NAME OF APPLICANT: Watts Enterprises
AGENDA ITEM: Preliminary Phases 2, 3A, 3B and 3C
LOCATION OF ITEM: 600 North 200 East
ZONING DESIGNATION: R-1-15

ITEM: 2

Berg Engineering, agent for Watts Enterprises, is requesting Preliminary Approval for phases 2, 3A, 3B, and 3C of Watts Remund Farms Planned Unit Development. The proposal is for 58 single-family dwelling units located on 34.91 acres. The proposal is located at 200 East 600 North and is in the R-1-15 zone.

BACKGROUND:

Watts Enterprises is proposing preliminary approval of phases 2, 3A, 3B, and 3C of Watts Remund Farms master plan which is comprised of a small-scale standard subdivision and Planned Unit Development (PUD). The proposal is for 58 building pads located on 34.91 acres. The area of the proposed PUD has historically been in agricultural production. A dairy farm has been on the property for decades. There is generally a high-water table which lends itself to wetlands which are also present. Residents of the city, particularly those living next to the property, have raised concerns with staff regarding the development and potential impacts that it may have on surrounding properties. The City is committed to assuring that all code requirements are met and that impacts are

mitigated as they are identified during the approval and construction process. To identify impacts several studies have been conducted on and off site. These studies will be discussed later in this report.

There are 58 pads proposed in this phase which are of various sizes ranging from 48' x 68' (3,264 sq. ft.) to 63' x 68' (4,284 sq. ft.) in size. All structural improvements must be located within the building pad for each dwelling including window wells, eave overhangs, bay window, pop outs, decks, pergolas, and other structural items. Also, all units have a height limit of 35' measured from natural grade.

There are public and private trails in the proposal. The trail that runs along the west boundary is public and runs the entirety of the property from 250 North to 600 North. This trail will have a paved surface. The trail that runs along the southern and eastern boundary is a privately maintained trail that has a public easement. This trail will have a soft surface. The developer will also connect the southern trail to 300 North in the Swiss Paradise subdivision with a soft surface trail. The trail will continue to River Road with a soft surface. From River Road and 300 North, the developer will build a paved trail to the roundabout approved for the entrance to Memorial Hill. This section of trail will have a hard surface.

The streets located within the area of the PUD will be private roads and will be maintained by the homeowners' association (HOA). A public access easement will allow access to all the streets in the PUD. All on-site open space will be common area that will be owned by the HOA.

Sensitive lands are also located on the property and will be left undisturbed as required by the land use ordinance. These sensitive lands include wetlands and stream corridors.

LAND USE SUMMARY:

- 34.91 acres
- 15.71 acres of open space
- R-1-15 zoning
- Proposal contains 58 pads
 - Phase 2 – 18.05 acres – Units 40-52, 59, 60, 69-76, 84-87
 - Phase 3A – 3.53 acre – Units 53-58, 61-68
 - Phase 3B – 4.1 acres – Units 77-83
 - Phase 3C – 9.22 acres – Units 88-97
- Private roads will be maintained by the HOA

- The lots will connect to the Midway Sanitation District sewer and to the City's water line.
- 6' paved public trail is planned to run north and south through the length of the property, another privately maintained trail with a public easement will run along the south boundary and the eastern boundary. Other trails in the phases will be private with no public easement.
- Sensitive lands of the property include wetlands, and stream corridors

ANALYSIS:

Open Space – The code requires that each phase that is approved that there is enough open space to comply with the requirements of the code. For example, phase I must have at least 50% open space for that particular phase. If phase I has 75% open space, then phase II only needs to have 25% open space if both phases are equal in acreage. The proposed plan does exceed the open space requirements with a total of 55.55%.

Open Space Credit – The City Council has approved off-site open space for this proposal. Watts Enterprises owned property around the River Road roundabout which is parcel OMI-0563-0-026-034 and comprises 1.32 acres. This property was deeded to the City. The property was part of the open space requirement for the development and 2.2 units of density were granted to the developer as part of the approval. Watts Enterprises has landscaped the property and deeded the required water rights to the City as it would if the open space were part of the open space within the Watts Remund Farms PUD. Watts Remund Farms HOA are required to maintain the open space.

Density – The applicant is asking for approval for 58 dwellings in phase 2, 3A, 3B, and 3C. The density allowed for the entire master plan is 97 units.

Traffic Study – The developers have submitted a traffic study to the City as part of the application. Horrocks Engineers has reviewed that study to determine what road improvements are required.

Geotechnical Study – The developers have submitted a geotechnical study to the City as part of the application. Horrocks Engineers has reviewed that that study to determine if any special requirements are needed for construction of the roads and future structures in the development. Please see attached letter from Horrocks.

Public Participation Meeting – The developers did hold a public participation meeting on July 10, 2017 as required by the ordinance for master plan applications. This requirement is to give the developers an opportunity to present the development to the surrounding residents of the proposed development.

Sensitive Lands – The property does contain some wetlands that will not be disturbed through the development process. The wetlands will become part of the open space for the development and will be preserved. There is a stream/ditch that runs through the property. It will be impacted by the roads crossing the development because of the culverts that will cover the ditch. Midway Irrigation Company owns an easement to the ditch area and will need to approve modifications made to the current ditch. There is a warm spring on the property that will be preserved. There are also acres of wetlands on the property that are included in the open space areas of the development. A study has been submitted by the developer has been reviewed by three organizations that include The Army Corps of Engineers, Horrocks Engineers, and another third-party wetland expert that was decided by the City.

Staggered Setbacks – The Land Use Code requires staggered setbacks to help mitigate the “wall effect” that dwellings with the same setback on a straight street creates. The code states the following in Section 16.16.8.5.c:

Front setbacks for buildings from all private streets within the PUD shall be staggered at seven and one-half feet variances, with 25 feet the minimum setback. One-third of the buildings containing dwelling units shall be at each of at least three different setbacks as recommended by the Planning Commission and approved by the City Council. For example, one-third at 25 feet, one-third at 32 ½ feet and one-third at 40 feet. Setbacks for accessory buildings shall be as recommended by the Planning Commission and approved by the City Council. Setbacks from private streets shall be measured from top-back of curb or back of sidewalk or trail, whichever is further from the street centerline. The City Council may waive this requirement when a curvilinear street design is used and shown to create the same varying setback effect.

The application has staggered the front setback of the units in the proposed phases which will help reduce the “wall effect”.

Phase 1 Environmental Study and Water Study – The developer has submitted the required Environmental Study and requested water study. Horrocks Engineers has reviewed both.

Building pad private areas – 28 of the building pads have private areas located to the rear of each of the pads. The private areas are 12’ and allow the units to have items such as a roofed deck, pergola, garden, hot tub, fire pit, etc. or other improvements in these private areas. Pads that do not have private areas would not have the ability to have some of these improvements. All private areas are at a minimum of 25’ from any delineated wetlands.

Trails – The Trails Master Plan and the Master Parks Plan calls for a linear park and public trail to run north and south across the proposal. The City feels this is a very important community amenity that will benefit current residents and future residents for generations. The trail plan also calls for a connection to the Blackner property that is also part of the linear park trail system that will also be a 6’ wide paved trail. This trail will eventually connect to the Indian Summer subdivision with its part of the linear park trail system. There is another public trail running along 600 North which will be a 6’ paved trail. A third a private trail with a public easement that will also be 6’ wide and will run along the perimeter of the development on the east side and then along the southern boundary of the development.

Phase approvals – The developer is petitioning for preliminary approval of all four phases. Final approval may be petitioned for all the phases together or separately. Each approval is good for one year. The City Council may extend approvals, after a yearly review, for up to three more years after the initial approval.

WATER BOARD RECOMMENDATION:

The Water Board has not yet reviewed the proposal.

PROPOSED FINDINGS:

- The proposed plan does meet the requirements of the code for PUDs.
- The public trail system in the development will benefit the entire community by creating a trail away from collector roads.
- The proposal does comply with the approved master plan.

ALTERNATIVE ACTIONS:

1. Recommendation for Approval (conditional). This action can be taken if the Planning Commission finds the proposal complies with the requirements of the Land Use Code.
 - a. Accept staff report
 - b. List accepted findings
 - c. Place condition(s) if needed

2. Continuance. This action can be taken if the Planning Commission finds that there are unresolved issues.
 - a. Accept staff report
 - b. List accepted findings
 - c. Reasons for continuance
 - i. Unresolved issues that must be addressed
 - d. Date when the item will be heard again

3. Recommendation of Denial. This action can be taken if the Planning Commission finds that the request does not meet the intent of the ordinance.
 - a. Accept staff report
 - b. List accepted findings
 - c. Reasons for denial

December 10, 2019

Midway City
Attn: Michael Henke
75 North 100 West
Midway, Utah 84049

Subject: Remund Farms, Phase 2, 3A, 3B, & 3C Preliminary Approval

Dear Michael:

Horrocks Engineers recently reviewed the above development plans for Preliminary Approval. The proposed development is located near 200 East and 600 North. The entire development is 50.87 acres and contains 97 lots. Phase 1 which is 15.96 acres has been completed. Phase 2 of the proposed development is 18.05 acres and contains 27 lots, Phase 3A is 3.53 acres and contains 14 lots, Phase 3B is 4.10 acres and contains 7 lots, and Phase 3C is 9.22 acres and contains 10 lots. The following issues should be addressed.

Wetlands

- All wetland delineations have been approved with the US Army Corp of Engineers.
- Several units encroach within the 25' wetlands setback as approved by the City Council with the Master Plan Approval of the development. However, no units encroach within the actual wetlands.
- Any construction activities that will impact the delineated wet lands will need approval from the US Army Corp of Engineers.

Geotechnical and Hydrogeologic Investigation

- As part of the Phase 1 geotechnical investigation the developer installed and monitored 27 boring pits/piezometers over the entire site. Soil samples were taken to determine the type of soil and depth of groundwater. Generally, the site is covered with topsoil, a sandy lean clay covering pot rock. The soil depth varies from very shallow to a maximum depth of 3 feet. The general topsoil depth determined from the test pits is 12 inches.
- To monitor the groundwater elevation the groundwater at each piezometers was read on a monthly during the construction of Phase 1. As construction of future phases takes place monitoring will again be on a monthly basis.
- Hydrological analysis as previously done by Loughlin Water Association and Developer for Phase 1 should continue as previously approved for the site.

Water

- The proposed development will be served from the Gerber Mahogany Springs zone.

- Future Phases will tie into the 8" waterline that was installed as part of Phase 1.
- The fire hydrant spacing shall not exceed 500'.
- Preliminary plans need to be updated to show existing water that was installed as part of Phase 1.

Irrigation

- The proposed development will connect to existing irrigation from Phase 1 and install services with meters according to Midway Irrigation Company standards.

Sewer

- Part of Phase 2 shows a back-lot sewer line. The new sewer line should not encroach into the delineated wetlands area. This line will service lots 84 -87.
- To provide access to the sewer line, it should be placed in the cross section of the trail. All manholes shall be located within the trail shoulder or pavement. The cross-section of the trail shall be built to the roadway cross-section.

Roads

- A Traffic Impact Study was completed by Hales Engineering as part of Phase 1. The study indicates that the peak hour of operation is in the evening between 5:00 and 6:00 pm. The study indicates that each intersection is currently operating at a Level of Service (LOS) A. The study states that "All study intersections are anticipated to operate at LOS A during the evening peak hour with project traffic added." The traffic study was reviewed by a traffic engineer in our Pleasant Grove office. He generally agreed with the finding within traffic study.
- The proposed development will install 26' of asphalt, modified curb on each side of the road, with a 5' park strip and 5' sidewalk one side of the road. The developer will pay to the City the cost savings of installing 26' of asphalt rather than the standard 30' of asphalt.
- All roads within the proposed development will be private roads.

Trails:

- As part of the master plan amendment on September 17th, 2019 it was agreed that the developer would install a gravel trail along 300 North to River Road and an asphalt trail along River Road to the planned roundabout at the entrance to Memorial Hill. This should be shown as part of Phase 2 and Phase 3 preliminary plans.
- The trails that access the back-lot sewer line and laterals for lots 84-87 will need to have full road cross section to accommodate future maintenance and access of the cleaning truck.
- It should be clearly shown which trails are public vs private.
- All public trails within Phases 2 and 3 shall be shown as paved.

Storm Drain

- The storm water system within the proposed development will be a private storm drain systems. All maintenance for the system will be provided by the HOA. This should be updated in the development agreement.

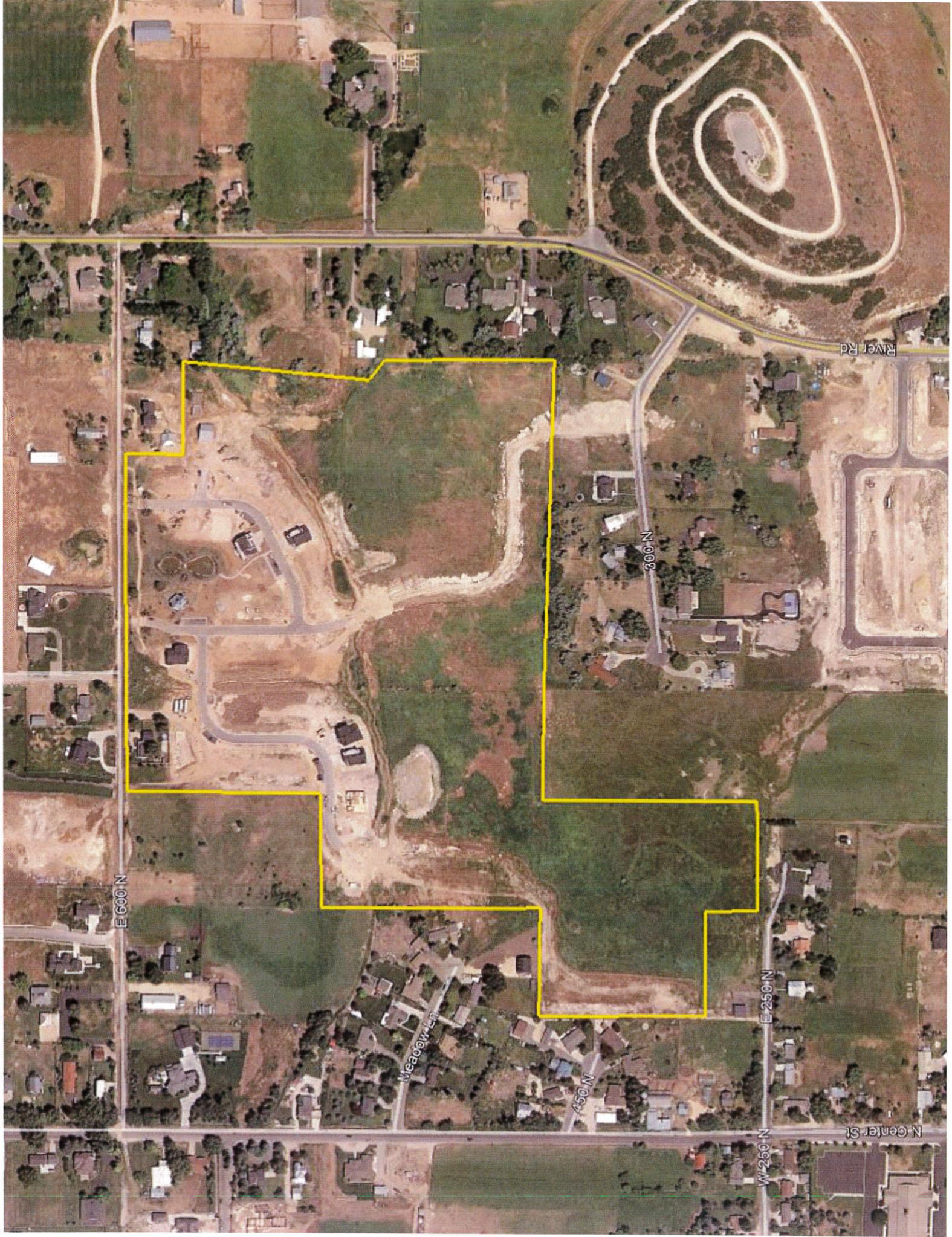
Please feel free to call our office with any questions.

Sincerely,
HORROCKS ENGINEERS



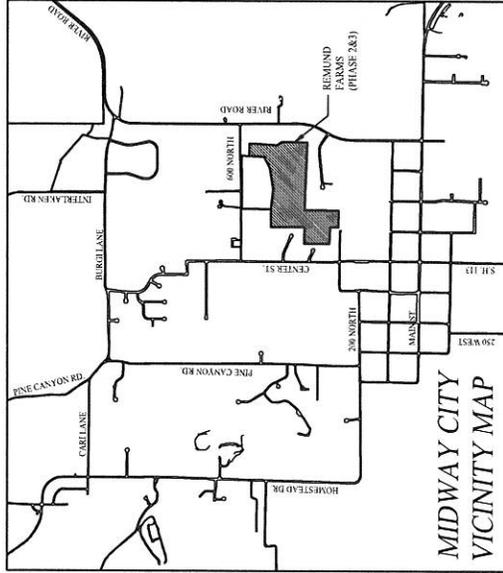
Wesley Johnson, P.E.
Midway City Engineer

cc: Paul Berg Berg Engineering



REMUND FARMS

PHASE 2 & 3 - PRELIMINARY APPLICATION



SHEET INDEX

1. AMENDED MASTER PLAN
2. PHASING MASTER PLAN
3. OPEN SPACE MASTER PLAN
4. PHASE 2 & 3 MASTER PLAN
5. PHASE 2 & 3 LANDSCAPE PLAN
6. UTILITY MASTER PLAN
7. PRELIMINARY SEWER PLAN - PHASE 2 & 3
8. PRELIMINARY WATER PLAN - PHASE 2 & 3
9. PRELIMINARY PRESSURIZED IRRIGATION PLAN - PHASE 2 & 3
10. PRELIMINARY STORM DRAIN PLAN- PHASE 2 & 3

REMUND FARMS PHASE 2 & 3 PRELIMINARY APPLICATION - 13 NOV 2019

THE ENGINEER'S SIGNATURE AND SEAL ARE REQUIRED FOR ALL PLANS AND SPECIFICATIONS. THE SEAL OF THE REGISTERED PROFESSIONAL ENGINEER IS REQUIRED FOR ALL PLANS AND SPECIFICATIONS.

DATE: 11.13.2019

WATTS ENTERPRISES
REMUND FARMS
COVER SHEET

BERG ENGINEERING
 Registered Group P.C.
 10000 N. 10th Street
 Suite 100
 Phoenix, AZ 85020
 (602) 998-1000
 FAX: (602) 998-1001
 www.berg-engineering.com

DATE: 11/13/2019
 DRAWN BY: CSE
 SHEET: 0



LEGEND:
 METLAGS (10.00 AC)
 OPEN SPACE REQUIREMENTS:
 PERIMETER - 40' MINIMUM
 INTERIOR - 100' MINIMUM
 TOTAL OPEN SPACE: 24.00 AC (22.25%)
 DATE: 11/15/2019
 TOTAL: 21.82 AC (20.92%) (ONE REQUIRED)

OPEN SPACE DESIGNATION BY PHASE		TOTAL PROJECT	
PHASE	AREA	OPEN SPACE PER PHASE	TOTAL AREA
1	13.58 AC	11.33 AC (70.38%)	13.58 AC
2	18.05 AC	1.32 AC (100.00%)	18.05 AC (78.83%)
3	20.85 AC	8.30 AC (40.00%)	34.01 AC (74.53%)
4	21.35 AC	0.50 AC (4.18%)	37.54 AC (86.83%)
5	41.00 AC	1.28 AC (31.22%)	41.86 AC (94.37%)
6	8.22 AC	5.53 AC (67.15%)	50.87 AC (93.52%)

OPEN SPACE NOTES:
 TOTAL AREA: 50.87 ACRES
 TOTAL OPEN SPACE: 24.00 ACRES (47.18% OF ENTIRE DEVELOPMENT)
 OPEN SPACE IN A SINGLE OPEN SPACE AREA = 18.47 ACRES (36.32%)
 SECTION 16.16(C) REQUIRES ONE-HALF OF ALL OPEN SPACE TO BE RETAINED
 FOR THE LIFE OF THE PROJECT. OPEN SPACE PARCEL # MEETS THIS PDR
 REQUIREMENT.

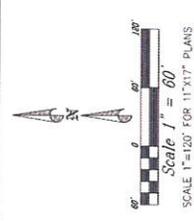


THIS DOCUMENT IS THE PROPERTY OF BERG ENGINEERING. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF BERG ENGINEERING.
 BERG ENGINEERING
 1000 S. W. 10th Ave., Suite 200
 Ft. Lauderdale, FL 33304
 DATE: 11/15/2019

WATTS ENTERPRISES
 REMUND FARMS
 OPEN SPACE
 AMENDED MASTER PLAN

BERG ENGINEERING
 1000 S. W. 10th Ave., Suite 200
 Ft. Lauderdale, FL 33304
 DATE: 11/15/2019

DRAWN BY: PMS
 DATE: 11/15/2019
 SHEET: 3
 REV:



- LEGEND**
- WETLANDS
 - TRAIL
 - IMPROVED DITCH OR POND
 - LANDSCAPING (KENTUCKY BLUE GRASS)
 - LANDSCAPING (NATIVE GRASS)

THIS DOCUMENT IS PREPARED FOR REVIEW ONLY. IT IS NOT TO BE USED FOR CONSTRUCTION. ANY CHANGES TO THIS PLAN MUST BE APPROVED BY THE ENGINEER. DATE: 11/02/2010

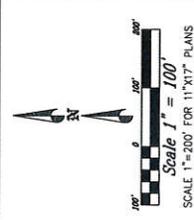
WATTS ENTERPRISES
 REMUND FARMS
 PHASE 2 & 3
 LANDSCAPE PLAN

BERG ENGINEERING
 Recreational Group P.C.
 10000 Highway 100
 Memphis, TN 38119
 ph: (901) 637-7740

DESIGN BY: PFB
 DRAWN BY: CMB
 DATE: 11/02/2010
 REV: 5



PLANT	SIZE	QTY	LOCATION
44	2" Cal	1	...
25	1.5" Cal	1	...
159	2.5" Cal	1	...
18	2" Cal	1	...
35	6" x 8"	1	...
38	8" x 10"	1	...
39	6" x 8"	1	...
40	8" x 10"	1	...
41	6" x 8"	1	...
42	8" x 10"	1	...
43	6" x 8"	1	...
44	8" x 10"	1	...
45	6" x 8"	1	...
46	8" x 10"	1	...
47	6" x 8"	1	...
48	8" x 10"	1	...
49	6" x 8"	1	...
50	8" x 10"	1	...
51	6" x 8"	1	...
52	8" x 10"	1	...
53	6" x 8"	1	...
54	8" x 10"	1	...
55	6" x 8"	1	...
56	8" x 10"	1	...
57	6" x 8"	1	...
58	8" x 10"	1	...
59	6" x 8"	1	...
60	8" x 10"	1	...
61	6" x 8"	1	...
62	8" x 10"	1	...
63	6" x 8"	1	...
64	8" x 10"	1	...
65	6" x 8"	1	...
66	8" x 10"	1	...
67	6" x 8"	1	...
68	8" x 10"	1	...
69	6" x 8"	1	...
70	8" x 10"	1	...
71	6" x 8"	1	...
72	8" x 10"	1	...
73	6" x 8"	1	...
74	8" x 10"	1	...
75	6" x 8"	1	...
76	8" x 10"	1	...
77	6" x 8"	1	...
78	8" x 10"	1	...
79	6" x 8"	1	...
80	8" x 10"	1	...
81	6" x 8"	1	...
82	8" x 10"	1	...
83	6" x 8"	1	...
84	8" x 10"	1	...
85	6" x 8"	1	...
86	8" x 10"	1	...
87	6" x 8"	1	...
88	8" x 10"	1	...
89	6" x 8"	1	...
90	8" x 10"	1	...
91	6" x 8"	1	...
92	8" x 10"	1	...
93	6" x 8"	1	...
94	8" x 10"	1	...
95	6" x 8"	1	...
96	8" x 10"	1	...
97	6" x 8"	1	...
98	8" x 10"	1	...
99	6" x 8"	1	...
100	8" x 10"	1	...



- LEGEND**
- WETLANDS
 - TRAIL
 - IMPROVED DITCH

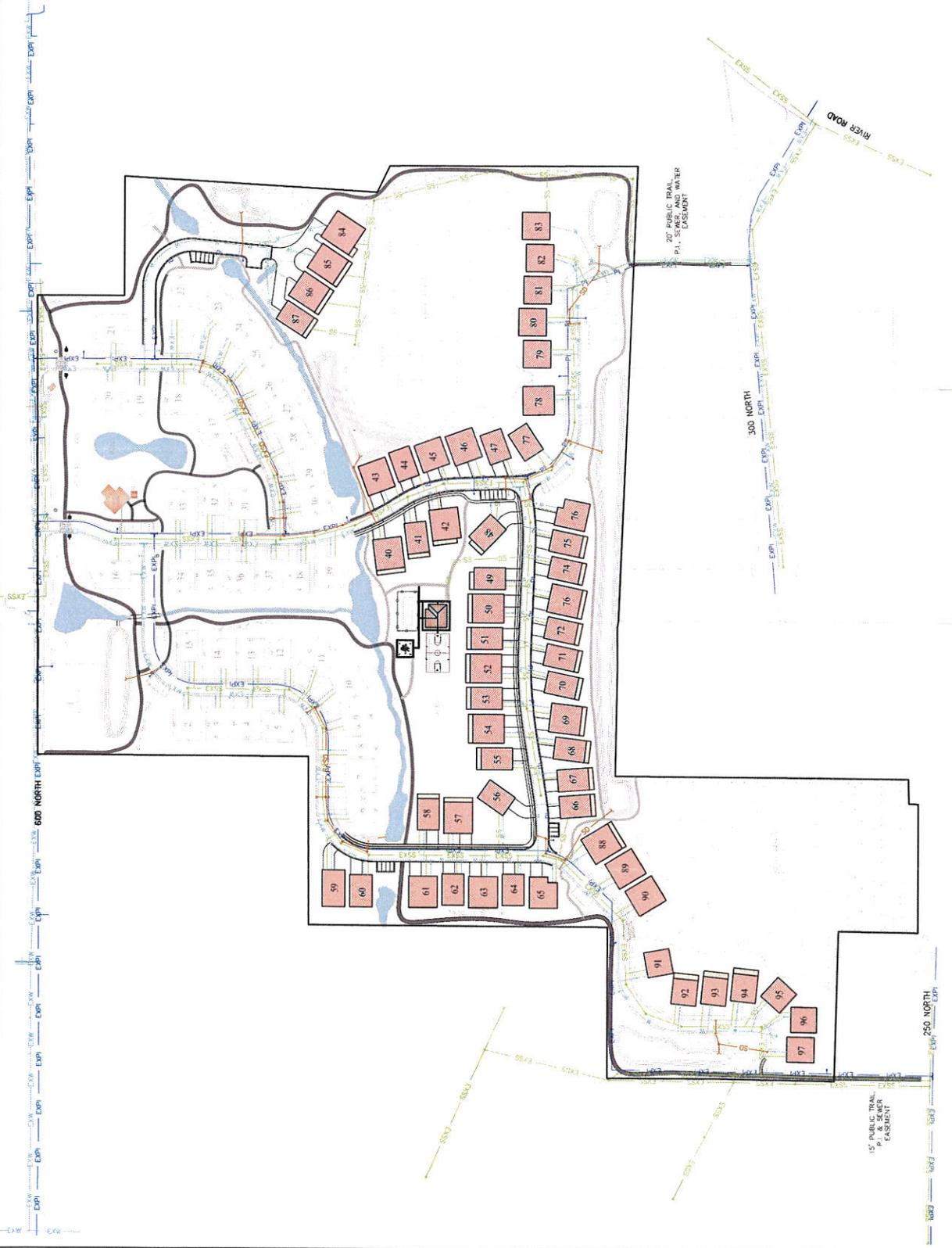
- PHASING NOTE:**
- PHASE 1 INCLUDES UNITS 1-39
 - PHASE 2 INCLUDES UNITS 40-52, 58-60,
 - PHASE 3 INCLUDES UNITS 61-68
 - PHASE 4 INCLUDES UNITS 69-73
 - PHASE 5 INCLUDES UNITS 74-83
 - PHASE 6 INCLUDES UNITS 84-87
 - PHASE 7 INCLUDES UNITS 88-97
- LEGEND:**
- EW - EXISTING CULINARY WATER
 - W - PROPOSED CULINARY WATER
 - EXP - EXISTING PRESSURIZED IRRIGATION
 - PI - PROPOSED PRESSURIZED IRRIGATION
 - EXSS - EXISTING SEWER
 - SS - PROPOSED SEWER
 - SD - PROPOSED STORM DRAIN
 - EXSD - EXISTING STORM DRAIN

UTILITY NOTE:
 THIS PLAN PROVIDES THE OVERALL UTILITY LAYOUT FOR THE PROJECT. THE EXACT LOCATION OF UTILITIES SHOWN ON PLAN ARE APPROXIMATE AND MAY BE INCOMPLETE. CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES. CONTRACTOR IS NOT RESPONSIBLE FOR THE UTILITIES WHICH WILL BE INSTALLED BY THE VARIOUS CITY UTILITY COMPANIES.

THIS DOCUMENT IS RELEASED FOR YOUR REVIEW. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF BERG ENGINEERING.

DATE: 12.02.2018

WATTS ENTERPRISES REMUND FARMS UTILITY MASTER PLAN	
BERG ENGINEERING Resource Group P.C. 10000 Highway 101, Suite 200 Houston, TX 77036 PH: 281.557.9749 FAX: 281.557.9749	
DESIGN BY: EFB DRAWN BY: CSB	DATE: 11/01/2019 SHEET: 0





- LEGEND**
- WETLANDS
 - TRAIL
 - IMPROVED DITCH

PHASING NOTE:
 PHASE 1 INCLUDES UNITS 1-30
 PHASE 2 INCLUDES UNITS 40-52, 59-60,
 61-66
 PHASE 3 INCLUDES UNITS 67-73
 PHASE 4 INCLUDES UNITS 74-83
 PHASE 5 INCLUDES UNITS 84-91

- LEGEND**
- EXSS — EXISTING SEWER
 - SS — PROPOSED SEWER

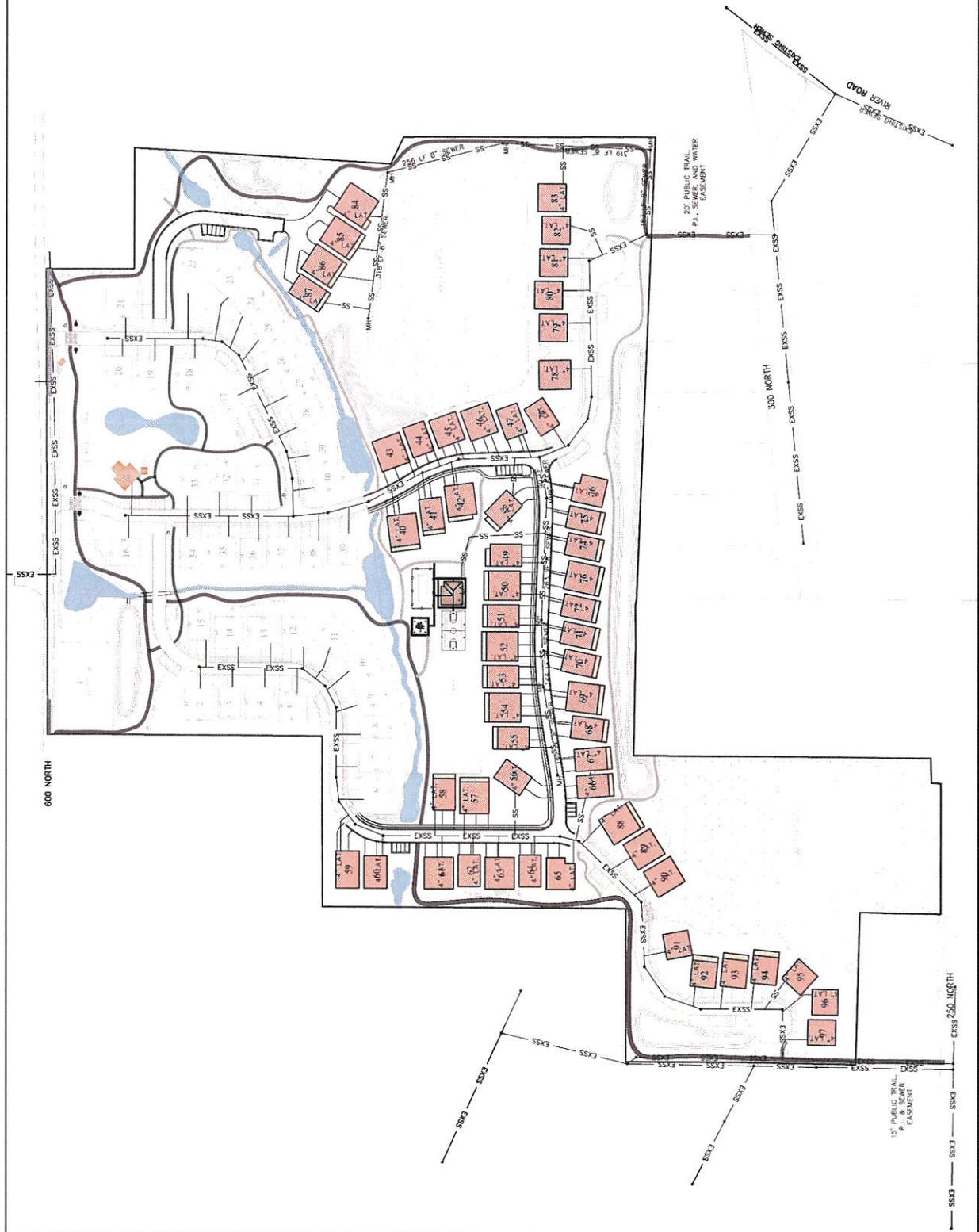
CONSTRUCTION NOTE:
 CONSTRUCTION UNITS SHOWN ON PLAN
 ARE APPROXIMATE AND MAY BE INCOMPLETE.
 CONTRACTOR IS RESPONSIBLE FOR BLUE STROKING
 OF UNITS.

THIS DOCUMENT IS RELEASED
 FOR REVIEW ONLY. IT IS NOT
 TO BE USED FOR CONSTRUCTION
 UNLESS SHOWN AND SEALED.
 DATE: 12.10.2019

WATTS ENTERPRISES
 REMUND FARMS
 PRELIMINARY SEWER PLAN
 PHASE 2 & 3

BERG ENGINEERING
 Resource Group P.C.
 1100 S. W. 10th St., Suite 204
 Ft. Lauderdale, FL 33304
 PH: (954) 657-9749

DESIGN BY: PEB DATE: 12 NOV 2019 SHEET
 DRAWN BY: CDB REV: 7





- LEGEND**
- WETLANDS
 - TRAIL
 - IMPROVED BIRCH

PHASING NOTE:
 PHASE 1 INCLUDES UNITS 1-39
 PHASE 2 INCLUDES UNITS 40-52, 59-60,
 64-76, 84-87
 PHASE 3 INCLUDES UNITS 93-98, 61-66
 PHASE 4 INCLUDES UNITS 77-83
 PHASE 5 INCLUDES UNITS 88-97

- LEGEND**
- EXP- EXISTING PRESSURIZED IRRIGATION
 - P- PROPOSED PRESSURIZED IRRIGATION

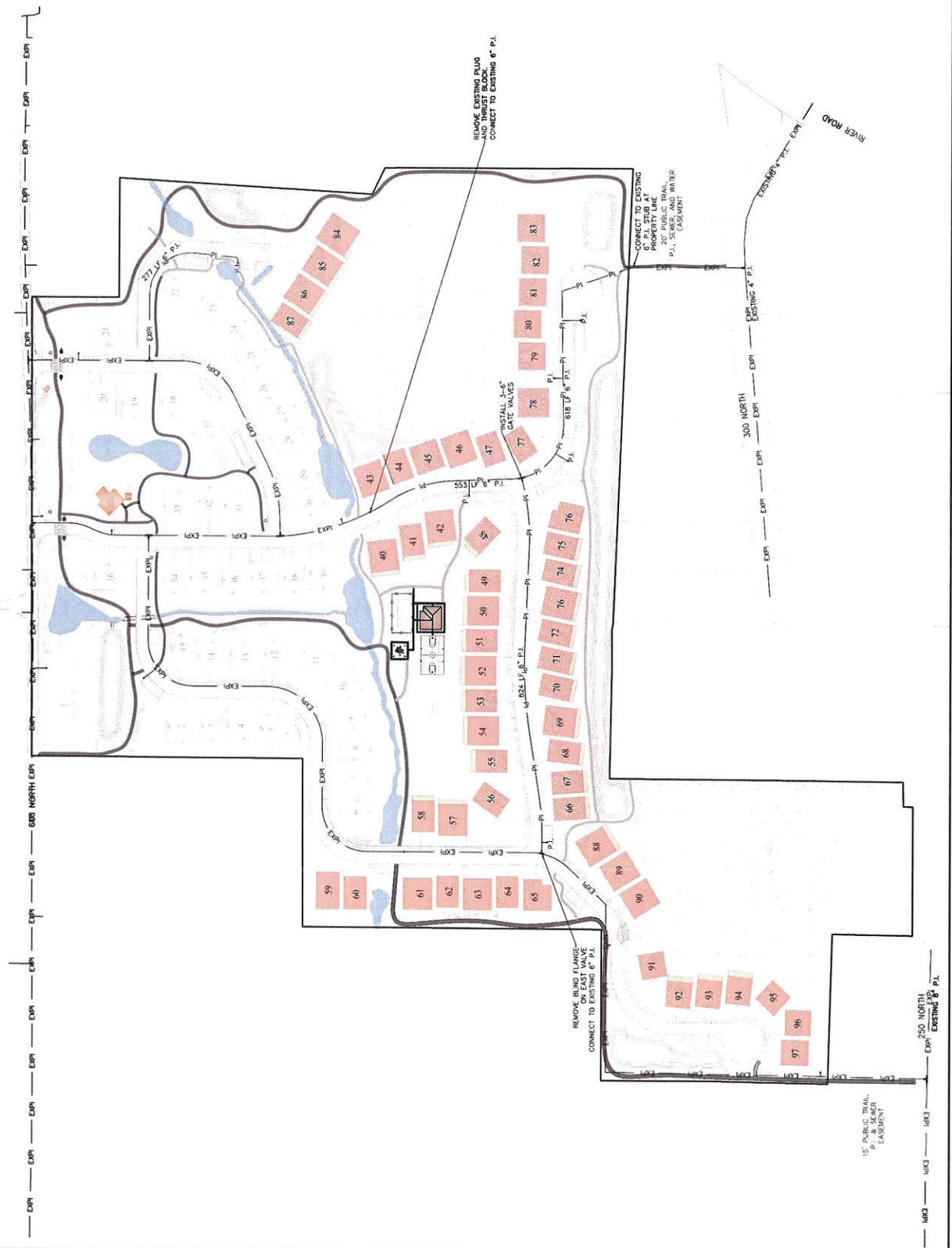
CONSTRUCTION NOTE:
 CONSTRUCTION PHASING SHOWN ON PLAN
 ARE APPROXIMATE AND MAY BE INCOMPLETE.
 CONTRACTOR IS RESPONSIBLE FOR BLUE STAKING
 OF UNITS.

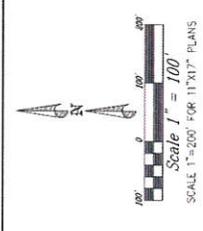
THIS DOCUMENT IS RELEASED
 FOR REVIEW ONLY. IT IS NOT
 TO BE USED FOR CONSTRUCTION
 UNLESS SO INDICATED.
 DATE: 11.03.2018

WATTS ENTERPRISES
 REMUND FARMS
 PRELIMINARY PRESSURIZED
 IRRIGATION PLAN - PHASE 2 & 3

BERG ENGINEERING
 Resource Group P.C.
 300 E. Main St. Suite 204,
 Phoenix, AZ 85004
 PH: (602) 457-9749

DESIGNED BY: FIB DATE: 13 NOV 2017 SHEET: 9
 DRAWN BY: CDB REV: 1

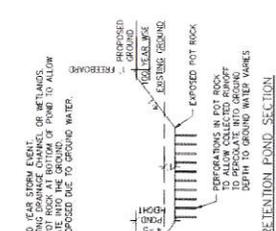




PHASING NOTE:
 PHASE 1 INCLUDES UNITS 1-39
 PHASE 2 INCLUDES UNITS 40-56, 59-65
 PHASE 3 INCLUDES UNITS 66-73, 76-83
 PHASE 4 INCLUDES UNITS 84-87
 PHASE 5 INCLUDES UNITS 88-95
 PHASE 6 INCLUDES UNITS 96-99

LEGEND:
 -SD- PROPOSED STORM DRAIN
 -EXSD- EXISTING STORM DRAIN

CONTINGENCY:
 CONTINGENCY UTILITIES SHOWN ON PLAN ARE APPROXIMATE AND MAY BE INCOMPLETE. CONTRACTOR IS RESPONSIBLE FOR BLUE STAMPING OF UTILITIES.



NOTES:
 1. POND CAPACITY AS SHOWN EVENT
 2. POND CAPACITY AS SHOWN WITH 1" PRECIPITATION
 3. REPAIRING IN POT ROCK AT BOTTOM OF POND TO ALLOW
 4. NO Sumps ARE PROPOSED DUE TO GROUND WATER

PHASE 1:
 100 YEAR, 24 HOUR RUNOFF=14,180 CF
 POND CAPACITY=15,000 CF

PHASE 2:
 100 YEAR, 24 HOUR RUNOFF=15,180 CF
 POND CAPACITY=16,000 CF

PHASE 3:
 100 YEAR, 24 HOUR RUNOFF=16,180 CF
 POND CAPACITY=17,000 CF

PHASE 4:
 100 YEAR, 24 HOUR RUNOFF=17,180 CF
 POND CAPACITY=18,000 CF

PHASE 5:
 100 YEAR, 24 HOUR RUNOFF=18,180 CF
 POND CAPACITY=19,000 CF

PHASE 6:
 100 YEAR, 24 HOUR RUNOFF=19,180 CF
 POND CAPACITY=20,000 CF

WATTS ENTERPRISES
 REMUND FARMS
 PRELIMINARY STORM DRAIN
 PLAN - PHASES 2 & 3

BERG ENGINEERING
 300 N. Main St. Suite 204,
 P.O. Box 100, Remond, MN 55069
 DATE: 11 NOV 2019
 DRAWN BY: CSR
 REV: 10



Table 13 - Report Coefficient for Drainage Area A

Drainage Area	Total Area	Roofs	Upland	Open	Water	Coef. of Runoff
Area A	1,177	1,177	0	0	0	0.75

Table 14 - 100 Year Storm Peak Runoff and Volume from Drainage Area A

Time Period	Runoff Intensity	Area	Peak Runoff	Volume
15 min	1.17	1,177	1,375	20,625
30 min	0.78	1,177	925	13,875
60 min	0.59	1,177	694	10,410
120 min	0.44	1,177	517	7,755
240 min	0.33	1,177	386	5,805
480 min	0.25	1,177	293	4,395
960 min	0.19	1,177	223	3,345
1,920 min	0.14	1,177	167	2,505
3,840 min	0.11	1,177	125	1,875
7,680 min	0.08	1,177	94	1,410
15,360 min	0.06	1,177	70	1,050
30,720 min	0.04	1,177	53	795
61,440 min	0.03	1,177	40	600
122,880 min	0.02	1,177	30	450

Table 15 - 100 Year Storm Peak Runoff and Volume from Drainage Area B

Time Period	Runoff Intensity	Area	Peak Runoff	Volume
15 min	1.17	1,177	1,375	20,625
30 min	0.78	1,177	925	13,875
60 min	0.59	1,177	694	10,410
120 min	0.44	1,177	517	7,755
240 min	0.33	1,177	386	5,805
480 min	0.25	1,177	293	4,395
960 min	0.19	1,177	223	3,345
1,920 min	0.14	1,177	167	2,505
3,840 min	0.11	1,177	125	1,875
7,680 min	0.08	1,177	94	1,410
15,360 min	0.06	1,177	70	1,050
30,720 min	0.04	1,177	53	795
61,440 min	0.03	1,177	40	600
122,880 min	0.02	1,177	30	450

Table 16 - 100 Year Storm Peak Runoff and Volume from Drainage Area C

Time Period	Runoff Intensity	Area	Peak Runoff	Volume
15 min	1.17	1,177	1,375	20,625
30 min	0.78	1,177	925	13,875
60 min	0.59	1,177	694	10,410
120 min	0.44	1,177	517	7,755
240 min	0.33	1,177	386	5,805
480 min	0.25	1,177	293	4,395
960 min	0.19	1,177	223	3,345
1,920 min	0.14	1,177	167	2,505
3,840 min	0.11	1,177	125	1,875
7,680 min	0.08	1,177	94	1,410
15,360 min	0.06	1,177	70	1,050
30,720 min	0.04	1,177	53	795
61,440 min	0.03	1,177	40	600
122,880 min	0.02	1,177	30	450

Table 17 - 100 Year Storm Peak Runoff and Volume from Drainage Area D

Time Period	Runoff Intensity	Area	Peak Runoff	Volume
15 min	1.17	1,177	1,375	20,625
30 min	0.78	1,177	925	13,875
60 min	0.59	1,177	694	10,410
120 min	0.44	1,177	517	7,755
240 min	0.33	1,177	386	5,805
480 min	0.25	1,177	293	4,395
960 min	0.19	1,177	223	3,345
1,920 min	0.14	1,177	167	2,505
3,840 min	0.11	1,177	125	1,875
7,680 min	0.08	1,177	94	1,410
15,360 min	0.06	1,177	70	1,050
30,720 min	0.04	1,177	53	795
61,440 min	0.03	1,177	40	600
122,880 min	0.02	1,177	30	450

Table 18 - 100 Year Storm Peak Runoff and Volume from Drainage Area E

Time Period	Runoff Intensity	Area	Peak Runoff	Volume
15 min	1.17	1,177	1,375	20,625
30 min	0.78	1,177	925	13,875
60 min	0.59	1,177	694	10,410
120 min	0.44	1,177	517	7,755
240 min	0.33	1,177	386	5,805
480 min	0.25	1,177	293	4,395
960 min	0.19	1,177	223	3,345
1,920 min	0.14	1,177	167	2,505
3,840 min	0.11	1,177	125	1,875
7,680 min	0.08	1,177	94	1,410
15,360 min	0.06	1,177	70	1,050
30,720 min	0.04	1,177	53	795
61,440 min	0.03	1,177	40	600
122,880 min	0.02	1,177	30	450

Table 19 - 100 Year Storm Peak Runoff and Volume from Drainage Area F

Time Period	Runoff Intensity	Area	Peak Runoff	Volume
15 min	1.17	1,177	1,375	20,625
30 min	0.78	1,177	925	13,875
60 min	0.59	1,177	694	10,410
120 min	0.44	1,177	517	7,755
240 min	0.33	1,177	386	5,805
480 min	0.25	1,177	293	4,395
960 min	0.19	1,177	223	3,345
1,920 min	0.14	1,177	167	2,505
3,840 min	0.11	1,177	125	1,875
7,680 min	0.08	1,177	94	1,410
15,360 min	0.06	1,177	70	1,050
30,720 min	0.04	1,177	53	795
61,440 min	0.03	1,177	40	600
122,880 min	0.02	1,177	30	450

Table 20 - Report Coefficient for Drainage Area B

Table 21 - 100 Year Storm Peak Runoff and Volume from Drainage Area B

Table 22 - 100 Year Storm Peak Runoff and Volume from Drainage Area C

Table 23 - 100 Year Storm Peak Runoff and Volume from Drainage Area D

Table 24 - 100 Year Storm Peak Runoff and Volume from Drainage Area E

Table 25 - 100 Year Storm Peak Runoff and Volume from Drainage Area F

Table 26 - Report Coefficient for Drainage Area C

Table 27 - 100 Year Storm Peak Runoff and Volume from Drainage Area C