

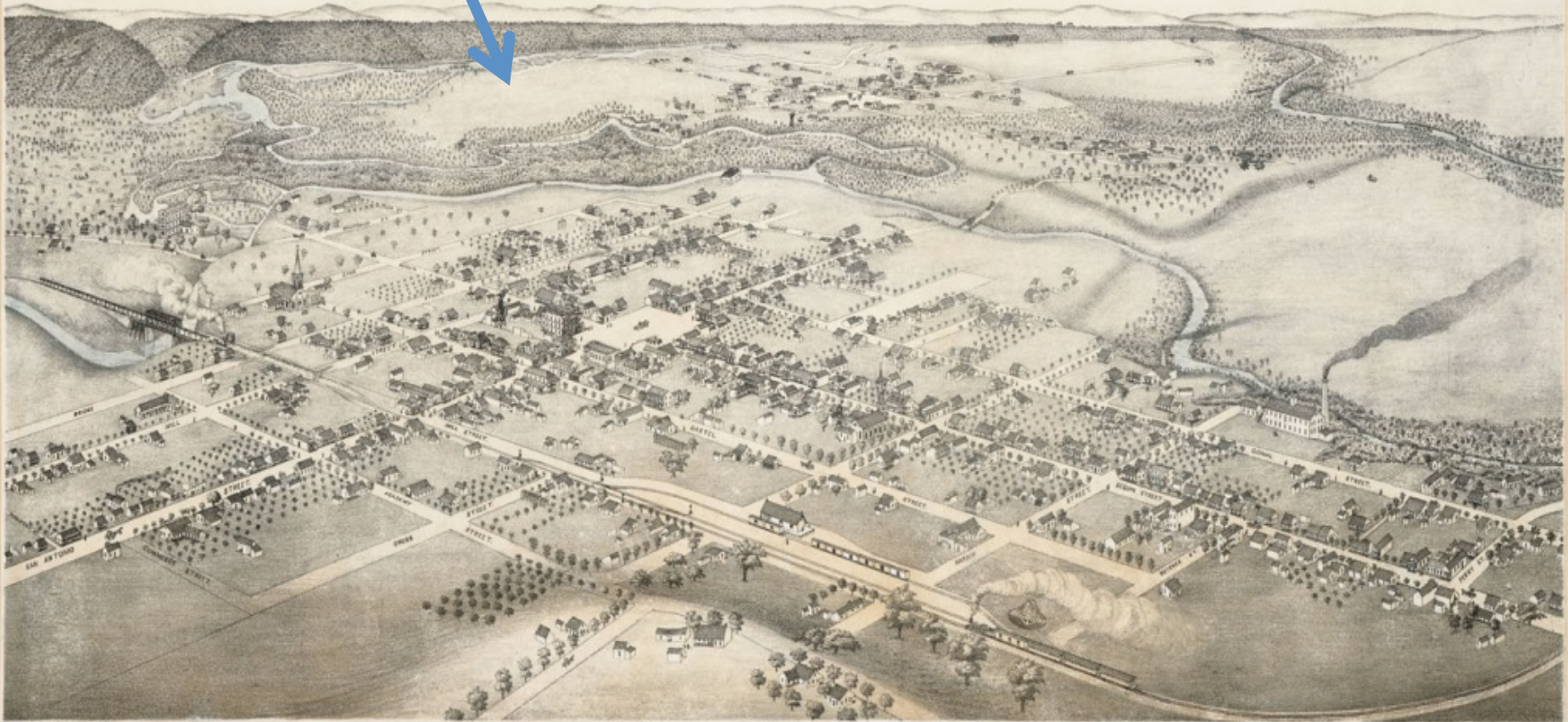


 HEADWATERS  
AT THE COMAL



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Drawn by AUGUSTUS EDEN.

## BIRD'S EYE VIEW OF NEW BRAUNFELS

COMAL COUNTY TEXAS  
1881

- 1. COURT HOUSE
- 2. COUNTY PRISON
- 3. CHARLES HOTEL

- 4. LADDO'S HILLS
- 5. WOODS HILLS
- 6. PARKERSBURG HEIGHTS
- 7. PARKERSBURG HEIGHTS
- 8. BERRY

- 9. BRADLEY PRESBYTERIAN CHURCH
- 10. BRADLEY CATHOLIC CHURCH
- 11. CHARLES PRESBYTERIAN CHURCH
- 12. METHODIST EPISCOPAL CHURCH
- 13. COMAL HILLS

- 14. REPRESENTATIVE FOR THE DISTRICT OF TEXAS
- 15. COUNTY CIVIL AND CRIMINAL COURT
- 16. COURTHOUSE





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## **Lake | Flato**

National leader in the master planning and design of Visitor Centers with over a dozen projects in locations throughout the country.

## **Ten Eyck Landscape Architects**

Recognized leader in the field of sustainability for the site design of numerous Leadership in Energy and Environmental Design certified projects.

## **Biohabitats**

Services include water master planning/audits, water conservation & reuse feasibility, decentralized wastewater treatment & reuse, Living Building Challenge™ & net zero water analysis, rainwater harvesting & reuse, natural/living wastewater systems, grey and black water treatment & reuse.

## **Ecosystem Design Group of the Lady Bird Johnson Wildflower Center**

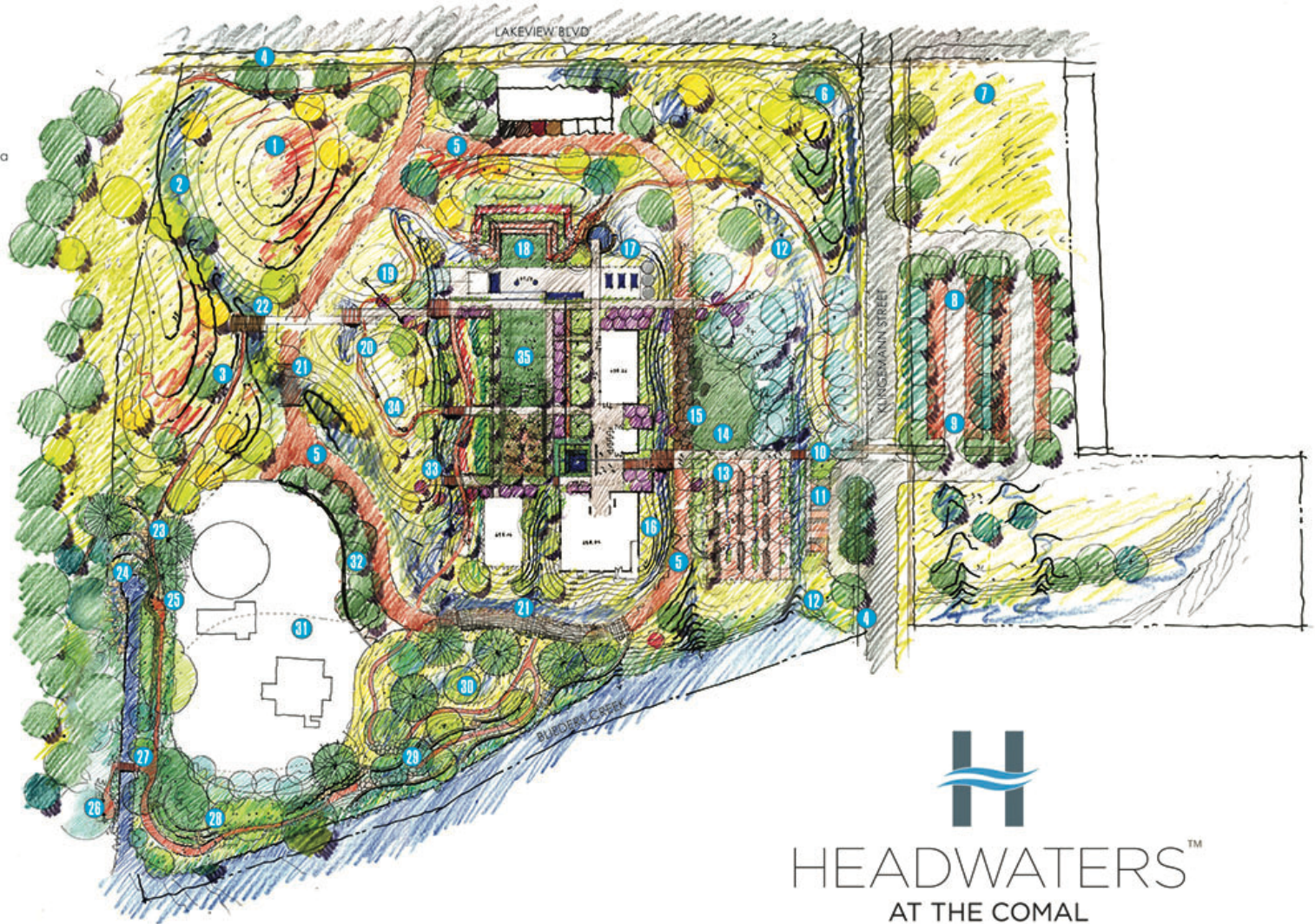
Trained in landscape architecture, ecology, geography, planning and sustainable design to optimize the ecological, environmental and sociological function of landscapes.

## **AmaTerra Environmental, LLC**

Professional environmental consulting firm focused on addressing natural and cultural resource issues. Worked as our liaison with Texas Historical Commission on Historic Designation and archaeological challenges.

## Legend

- 1 savanna/stormwater diversion berm
- 2 upper savanna bioswale
- 3 upper savanna nature trail
- 4 public sidewalk
- 5 primary loop path/firelane
- 6 monumental signage
- 7 prairie / overflow parking area
- 8 permeable parking garden
- 9 secondary accessible parking area
- 10 entry promenade
- 11 visitor drop-off & primary accessible parking area
- 12 lower woodland bioswale
- 13 picnic garden
- 14 native lurf display garden
- 15 recycled concrete forecourt
- 16 rainwater cisterns
- 17 harvested water reflecting pool & overlook
- 18 terraced garden amphitheater
- 19 raptor perch
- 20 pedestrian bridge
- 21 low water crossing
- 22 savanna overlook at bioswale north
- 23 accessible Comal Springs loop trail
- 24 spring Improvements
- 25 spring overlook
- 26 Comal Springs observation area
- 27 Comal Springs bridge
- 28 Blieders Creek overlook
- 29 terraced bank stabilization at Blieders Creek
- 30 water retention area & ephemeral wetland
- 31 well yard
- 32 security fence
- 33 savanna overlook at bioswale south
- 34 inner trail
- 35 inner courtyard [see enlargement]



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WHERE IT BEGINS.





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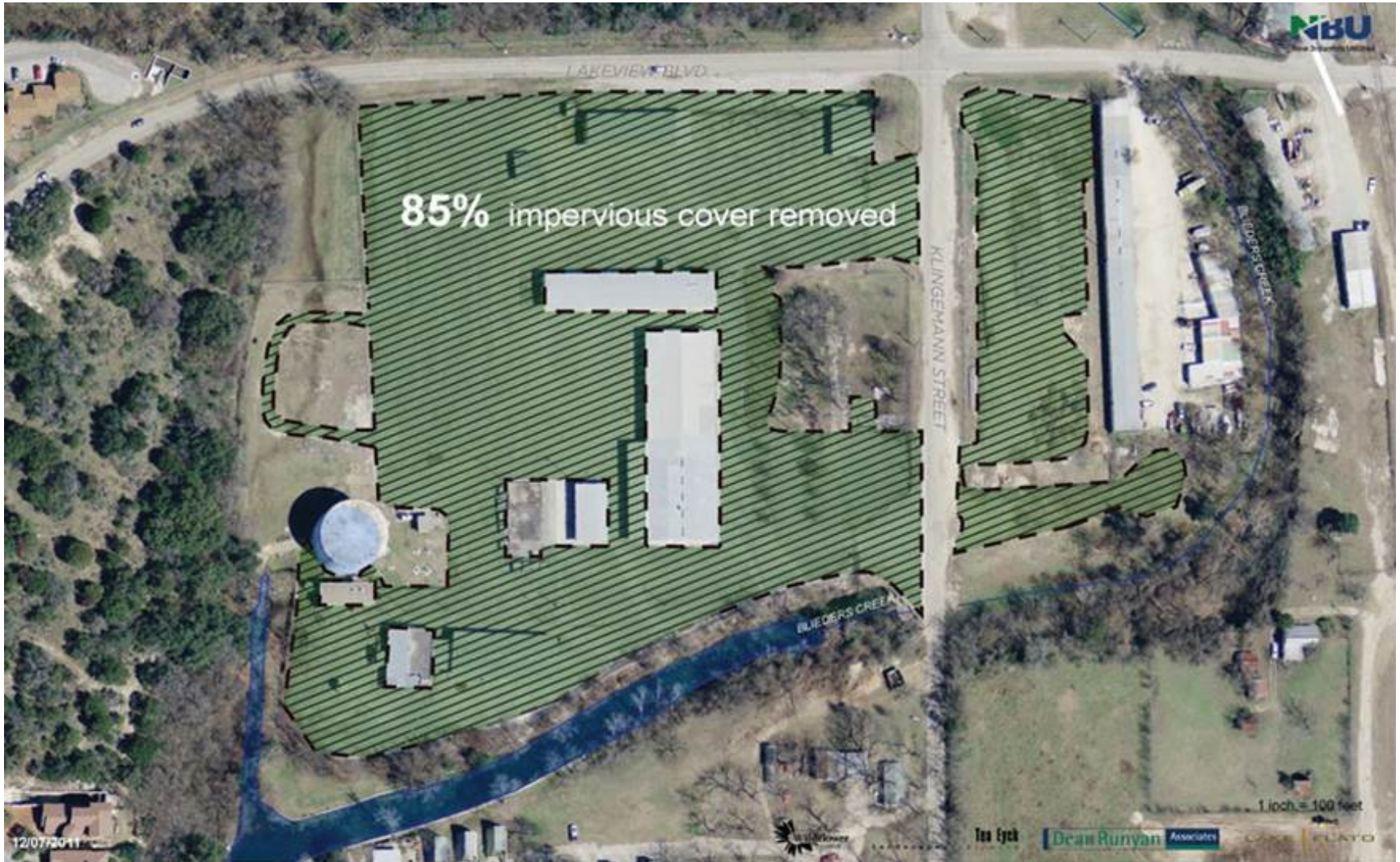
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## Pre-Restoration:

Time of Concentration: 10 min  
100-YR Discharge: 194 cfs  
1" Rainfall Volume: 34,280 ft<sup>3</sup>

Annual Volume: 26 AC-FT  
Annual TSS: 11,850 lbs

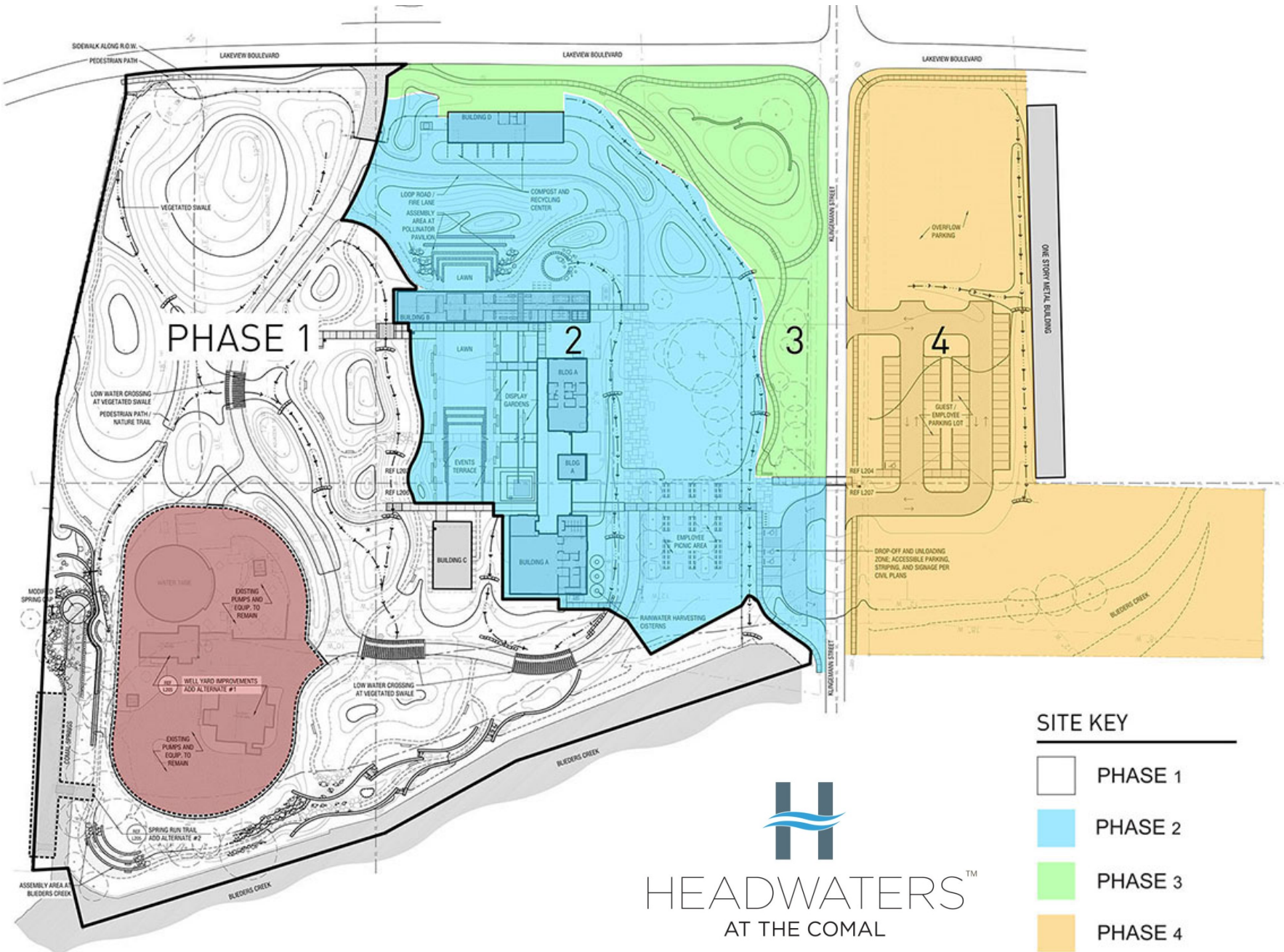
(equal to the weight of two Ford F-250s)



## Post-Restoration:

Time of Concentration: 20 min  
100-YR Discharge: 65 cfs  
1" Rainfall Volume: 6,940 ft<sup>3</sup>

Annual Volume: 5.25 AC-FT  
Annual TSS: 2,100 lbs  
Annual TSS with BMPs <670 lbs



PHASE 1

2

3

4

SITE KEY

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- Existing NBU Facilities

  
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WHERE IT BEGINS.

Phase	Description	Total Estimated Cost	NBU Fiscal Year
Land Acquisition	16 acres	\$0	FY 11
Due Diligence, Planning & Design	Master plan development; project design; design development drawings; environmental assessments; archeological surveys; apply for USACE and USFWS permits	\$2 million	FY 11-15
Phase 1	Spring & landscape restoration; Run site utilities; Spring run observation areas; construct outdoor classroom	\$6 million (\$1.5 from other sources)	FY 2016 FY 2017
Phase 2	Building Construction	\$13.45 million (\$8.67 from other sources)	FY 18-20
Phase 3	Monument signage; way finding signs; additional trails, landscaping and parking	\$1.45 million (\$935,000 from other sources)	FY 21

Lifetime Project Cost: \$22.9 million

Reimbursable through grants and donations: \$11.5 million

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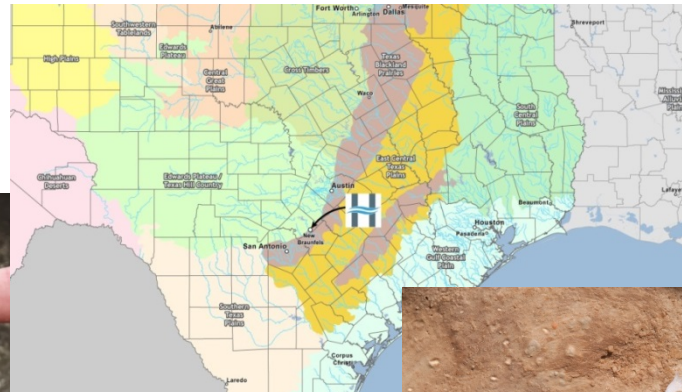
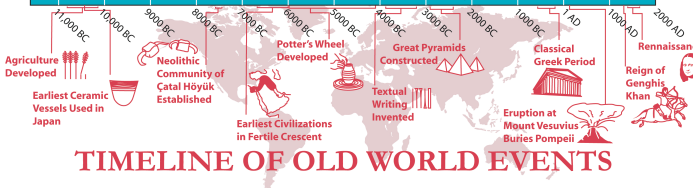
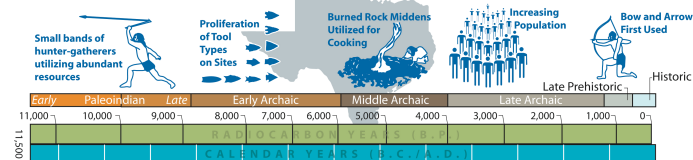


## Phase I opening Fall 2017

- Restoration of springs & habitats
- Enjoyment of a community treasure
- Engagement :History, Archaeology, Geography, Stewardship of natural resources, Endangered species

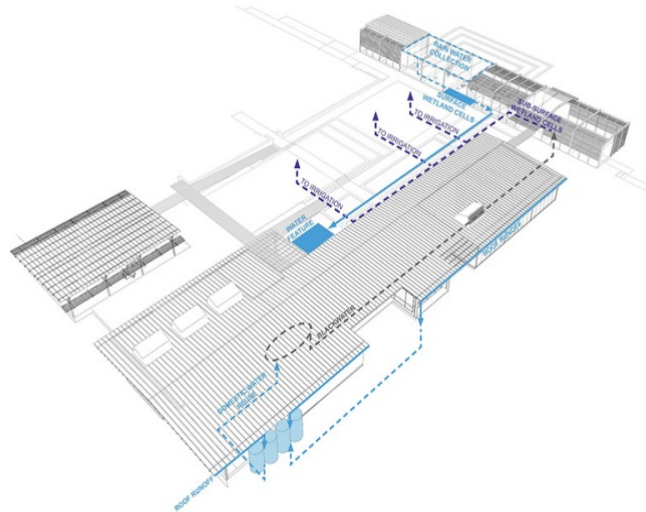


### TEXAS HISTORY & PREHISTORY



## Phase II Sustainable Features:

- Rainwater harvesting system
- Black water reuse system connected to “Living Building”
- Permeable walkways and parking areas
- Smart building applications
- Low impact development – reuse of materials





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NBU - KLINGEMANN DEVELOPMENT  
new braun f&e, tx | 30 september 2014

ENTRY  
LAKE FLATO





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## **What NBU's Headwaters project means for New Braunfels:**

- A Community Resource
- Storm Water Mitigation
- Ecological Restoration
- Environmental Tourism
- Commitment to Sustainability
- Protection of Water Quality in Comal Springs and River
- Preservation of a Historical & potentially significant Archaeological Site



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Nancy Pappas (830) 608-8828

